

A REVIEW OF THE NEOTROPICAL GENUS

STYPOMMISA (DIPTERA: TABANIDAE)^{1,3}

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Abstract. The tabanid (Diptera) genus *Stypommisa* Enderlein is redefined and 28 species are included. Of these 26 are keyed, the remaining 2 omitted for lack of fresh material. Twenty names associated with the genus at various times are considered synonyms, *nomina nuda* or belonging in other genera. Seven new species are described and figured: *S. anoriensis*, NW Colombia; *S. apicalis*, E Peru, E Bolivia, W Brazil; *S. aripuana*, Mato Grosso, Brazil; *S. changena*, mountains of W Panama and E Costa Rica; *S. kroeberi*, E Peru, E Bolivia; *S. spilota*, E Peru; and *S. xanthicornis*, Santa Catarina, Brazil. Available material of the described species is discussed and most species are figured.

INTRODUCTION

This taxonomically difficult group of small species was first recognized by Lutz and Neiva in 1914, but neither their generic nor specific names were validly published (Fairchild 1961). Enderlein (1923) proposed the name used here in 1923 with a brief 2 line diagnosis based on the then undescribed *Stypommisa punctipennis* Enderlein. In 1925 both genus and species were fully described, the latter from both sexes, but no other species were included. Kroeber (1929) gives a key to the smaller genera of South American Tabanini, in which *Stypommisa* is characterized as either lacking ocelli or these single or indistinct, not metallic, males with thickly pilose eyes, both sexes with thread-like palpi and the wings with an appendix. He includes 3 species in the genus, one of which he had described on a previous page in *Stypommia*. Kroeber (1934) had difficulty with the group, placing various species in a number of different Enderlein genera, we believe in a desire

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to follow Enderlein wherever he could. Fairchild (1969, pp. 219, 239) attempted to define and key the genus, and in 1971 he gave a generic synonymy and listed 23 species of *Stypommisa* with 8 apparent synonyms. The present list includes 17 of these names as valid, 3, *abdominalis* Philip, *ferruginosus* Walker and *punctipennis* Enderlein are considered synonyms, and 3, *boliviensis* Kroeber, *serena* Kroeber and *tantulus* Hine, we now believe do not belong in *Stypommisa*. Since the publication of the Neotropical Catalogue (Fairchild 1971), Philip has proposed 3 species and 1 subspecies, of which *apaches* Philip (1969, 1977) is a *Stenotabanus*, *Stypommisa* (*Styphocera*) *antennina* Philip is either a good genus, or a subgenus of *Dasybasis* while *u-nigrum* Philip and *hypographa neofurva* Philip seem valid. Fairchild (in Wilkerson 1979) described *bipuncta* as new and Wilkerson (1979) added *Tabanus simplex* Walker, previously placed by Fairchild (1971) in *Dicladocera*, though we now feel it is better returned to *Tabanus*. With these deletions and additions, the number of species in *Stypommisa* stood at 21, to which we here add 7 new species, giving a total of 28 species which we now recognize. One other name, *Tabanus maculinevris* Macquart 1855 was placed in *Stypommisa* by Kroeber (1934), while Fairchild, who studied the poorly preserved type in the BM(NH) (1956) and felt it was most similar to *fulviventris* Macquart, nevertheless listed it as *Tabanus* in the Catalogue (1971). The possible relationships of this species to both *Stypommisa* and to *Anerythropterus* Barretto must await further fresh material and restudy of Macquart's and Barretto's types.

The genus as treated here consists of small species rarely if ever exceeding a wing or body length of 13 mm though frequently considerably less than 10 mm in both dimensions. The included species possess a well marked tubercle at vertex, often with vestiges of one or more ocelli, few to numerous, rarely without, setae on the basicosta, well marked frontal calli, only rarely sparsely pilose eyes in the female, though male eyes often densely pilose. The eyes may be unicolorous green or bronze, bicolored, or with a median dark stripe, rarely otherwise. Many of the species have dark clouds on the cross veins and fork of third vein (R_{4+5}), and often a short to long appendix at the fork. The frons is generally narrow, the index over 4, and usually nearly parallel sided, though there are exceptions to both conditions. The generic synonymy is given in Fairchild (1971).

Nothing is known of the life histories or early stages of any species, and very little has been recorded as to the habits of the adults. Fairchild (1953) records 2 of the Panamanian species as being over 90% arboreal, these at least being attracted to men stationed in the forest canopy. The few known males have usually been taken at light, though unbaited flight traps have taken a few also. This last method has yielded the great bulk of our material, in one case, 8 males, 1418 females, of 6 species were taken from a single locality on several occasions, not exceeding a total of 3 months trapping. Most species seem to be confined to a forest habitat. We cannot recall having been attacked by *Stypommisa* on more than a very few occasions, though men stationed at both ground level and in the forest canopy to collect mosquitoes have frequently taken *Stypommisa*. We have found no records of their biting other animals.

The group as here treated is possibly not monophyletic, since several more or less distinct groups within the genus seem to exist, as follows: *pequeniensis* group—mainly brown species without abdominal markings or these in the form of median pilose triangles, broad to narrow pilose bands or indistinct median pilose stripes, not underlain by pale pollinosity. The wings are tinted, often strongly, but spots on cross veins and fork are generally small or absent. This group includes *pequeniensis* Fairchild, *flavescens* Kroeber, *captiroptera* Kroeber, and *glandicolor* Lutz; *modica* group—this includes mainly black species with the first few abdominal tergites bluish pruinose, with or without white pilose triangles, the wings

more or less tinted and always with at least a spot on fork of 3rd vein. The group consists of *modica* Hine, *hypographa* Kroeber, *hypographa neofurva* Philip, *maruccii* Fehld., *prunicolor* Lutz and *jaculator* Fehld. They also share a black clavate frontal callus, and most, if not all of the species are arboreal; *scythropa* group—these species all have prominent middorsal pale pollinose abdominal triangles, often heavily spotted wings, generally pale body coloration, usually without pruinosity, and frontal calli usually round and joined above to a slender ridge. Included are *scythropa* Schiner., *xanthicornis* n. sp., *fulviventr*is Macquart., *paraguayensis* Kroeber and *rubrithorax* Macquart. All are from southern Brazil, Paraguay and northern Argentina.

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SYNONYMICAL CHECKLIST OF NAMES DISCUSSED

Species believed valid *Stypommisa* are in boldface, as are all generic names.

- abdominalis Philip 1960 (*Stypommia*) = **flavescens** (Kroeber) 1930 (*Stypommia*) (p. 20)
- affinis** Kroeber 1929 (p. 10)
- anonymous Lutz and Neiva 1909 (*Tabanus*) nomen nudum = **rubrithorax** (Macquart) (p. 37)
- anoriensis** n. sp. (p. 11)
- antennina Philip (as (*Styphocera*), probably a *Dasybasis*) (p. 2)
- apaches Philip 1977 = **Stenotabanus** (p. 2)
- apicalis** n. sp. (p. 13)
- aripuana** n. sp. (p. 14)
- beieri Philip 1958 (*Hybomitra*) = **scythropa** (Schiner) (p. 39)
- bipuncta** Fairchild 1979 (in Wilkerson 1979) (p. 16)
- boliviensis Kroeber 1930 (*Stypommia*) = **Tabanus** s.l. (p. 2)
- callicera** (Bigot) 1892 (*Tabanus*) (p. 17)
- captiroptera** (Kroeber) 1930 (*Tabanus*) (p. 18)
- changena** n. sp. (p. 19)
- ferruginosus Walker 1850 (*Tabanus*) = **fulviventris (Macquart) (p. 21)**
- flavescens** (Kroeber) 1930 (p. 20)
- flavescens: Barretto 1957 *Stypommisa* = **captiroptera** (Kroeber) (p. 18)
- frondicolus Fairchild 1951 (*Stenotabanus*) = **maruccii** (Fairchild) 1947 (p. 30)
- fulviventris (Macquart) 1846 (*Tabanus*) (p. 21)**
- furva** (Hine) 1920 (*Tabanus*) (p. 22)
- glandicolor** (Lutz) 1912 (*Tabanus*) (p. 24)
- hypographa** (Kroeber) 1930 (p. 25)
- jaculator** (Fairchild) 1942 (*Stenotabanus*) (p. 27)
- kroeberi** n. sp. (p. 28)
- lerida** (Fairchild) 1942 (*Stenotabanus*) (p. 30)

- maculinevris Macquart 1855 (in Fairchild (1971) as **Tabanus**, in Kroeber (1934) as **Stypommisa**) Not recognized by us (p. 2)
 maculipennis Kroeber 1929 (**Stypommia**) = **furva** (Hine) (p. 22)
maruccii (Fairchild) 1947 (**Stenotabanus**) (p. 30)
modica (Hine) 1920 (**Tabanus**) (p. 32)
neofurva Philip 1969 (ssp. of **hypographa**) (p. 25)
paraguayensis (Kroeber) 1930 (p. 34)
pequeniensis (Fairchild) 1942 (**Stenotabanus**) (p. 35)
 pequiensis: Philip 1960 (lapsus) (p. 35)
prunicolor (Lutz) 1912 (**Tabanus**) (p. 37)
 punctipennis Enderlein 1925 = **scythrope** (Schiner) (p. 39)
 punctulipennis Enderlein 1925 (**Theriopectes**) = **rubrithorax** (Macquart) (p. 37, 39)
rubrithorax (Macquart) 1838 (**Tabanus**) (p. 37)
 ruficornis Kroeber 1930 = **modica** (Hine) (p. 32)
scythrope (Schiner) 1868 (**Tabanus**) (p. 39)
 serena Kroeber 1931 (**Tabanus**). Not **Stypommisa** (p. 2)
 simplex Walker 1850 (**Tabanus**). Is a **Tabanus** (p. 2)
spilota n. sp. (p. 40)
 tantulus Hine 1920 (**Tabanus**). Not **Stypommisa** (p. 2)
u-nigrum Philip 1977 (p. 41)
venosa (Bigot) 1892 (**Tabanus**) (p. 43)
xanthicornis n. sp. (p. 44)
 xenium Fairchild 1947 (**Stenotabanus**) = **captiroptera** (Kroeber) (p. 18)

KEYS TO SPECIES

The keys to both sexes presented below are intended only to aid in identification and not to suggest phylogenetic relationships. Males of only about half the known species have been recognized or described, and considerable doubt exists as to the proper association of a number of these. Generally the male key seems to work, except in the case of 3 closely similar species, **pequeniensis**, **captiroptera** and **anoriensis**, where we have been unable to find unequivocal differences among the 8 available specimens, though we feel reasonably certain that at least 2 and possibly all 3 species are represented. Only study of extensive series from several localities is likely to resolve the problem.

KEY TO STYPOMMISA FEMALES

- 1 Wing with weak clouds on fork and end of discal cell, none at ends of basal cells, but well defined dark apical patch. Legs unicolorous brown. Abdomen dorsally dark pilose, rarely with small indistinct pale pilose triangles 2
 If strong apical patch present, then very strong spots present on all crossveins and fork 3
- 2 Basal plate elongated, dorsal angle approximately 1/3 to 1/2 distance from base to distal end of plate (Figs. 1-3). Pleura and mesonotum concolorous, at most lower pleura somewhat contrasting gray pollinose. Vein segment between appendix and R_5 generally as long or longer than appendix. Frontal index 7.5-9.9 **apicalis** (p. 13)

- Basal plate not elongated, dorsal angle approximately 1/4 distance from base. Pleura gray pollinose, contrasting with brown mesonotum. Vein segment at fork nearly always shorter than appendix. Frons wider, index 5.3-7.1 *pequeniensis* (p. 35)
- 3(1) Wing including costal cell glass clear. Abdomen above with dark median integumental streak or spot on tergite 2 and row of small middorsal pale pollinose triangles. Viewed from behind, abdomen shows prominent dorsolateral pale pruinose spots on all tergites as well as pale pruinose middorsal triangles. Frontal index 4.6-5.0
 *aripuana* (p. 14)
- Wing either spotted or tinted, or abdomen without pale pollinose triangles or both 4
- 4 Wing with very large distinct spots at fork and on all crossveins, distinctly demarcated apical wing patch, and posterior margin of wing with well demarcated smoky brown border. Pale areas of wing yellowish. Abdomen above banded, tergites with broad golden yellow pilose posterior margins *u-nigrum* (p. 41)
- Wing never with discrete smoky brown posterior border nor, if strongly spotted, with yellowish membrane. Abdomen various, but not as above 5
- 5 Frontal callus clearly higher than wide, occupying at least lower 1/3 of frons, prominent, shiny black, clavate or drop shaped, tapering above into narrow ridge nearly reaching ocellar tubercle. Brown to black species, abdomen, when viewed from behind with extensive blue-gray pruinosity, especially on first 2 tergites. Frons relatively broad, frontal index usually less than 5.5. Wings never with appendix at fork of third vein 6
- Not as above. If abdomen bluish pruinose, callus is rectangular or square with a slender dorsal extension. Often appendix at fork 11
- 6 All tibiae entirely black and black haired. Mesonotum prominently striped. Abdomen when undenuded with silvery pilose median triangles and posterolateral angles on tergites 2-6 *maruccii* (p. 30)
- At least fore tibiae paler at base, generally with some white hairs. Mesonotum not, or very weakly, striped. Abdomen with or without pale pilose markings 7
- 7 Abdomen gray or brown, in unrubbed specimens with median triangles of pale hairs on tergites 2 or 3-5. Wing spots small, only prominent on fork of third vein 8
- Abdomen usually black, without marked middorsal pale triangles, or these represented by a few pale hairs. Wing spots generally large and prominent at both fork and end of discal cell 9
- 8 Area of frons lateral to callus denuded, the lower 1/3-1/2 of frons appearing as a shiny rectangle with a thin shiny ridge extending through it. Antennae wholly yellowish orange. Legs dark brown to black, black pilose, except for bases of fore tibiae. Abdomen dark gray in ground color *prunicolor* (p. 37)

- Callus not as above, gradually tapered and clavate. Antennae with contrasting black annuli or terminal annulus dusky. Legs yellow to pale brown and dark pilose. Abdomen light brown, rarely nearly black **jaculator** (p. 27)
- 9(7) Antennae with 3rd segment (flagellum) wholly blackish. Tips of all longitudinal veins with small dark clouds **hypographa** (p. 25)
Third antennal segment bicolored or wholly yellow-orange. Longitudinal veins not so spotted 10
- 10 Third antennal segment bicolored, annuli contrastingly black. Legs with brownish or reddish integument **hypographa neofurva** (p. 25)
Third antennal segment yellow-orange, tip often dusky. Legs black, fore tibiae white haired basally **modica** (p. 32)
- 11(5) Abdomen above with distinct pale pollinose and pilose triangles. Frontal callus nearly always distinct, rounded, not fused into a clavate ridge 12
Abdomen above without distinct pale pollinose triangles; at most pale haired triangles or slight middorsal widening of pale pollinose posterior borders evident. Callus often ridge-like 16
- 12 Antennae wholly yellow; basal plate and style short, annuli about as long as width of basal plate, the latter with only a slight dorsal angle. Light brown species with all crossveins and fork with weak infuscated clouds. Whole wing faintly yellowish brown tinted **xanthicornis** (p. 44)
Antennae not as above, the black annuli usually longer than plate is wide, basal plate yellow to brown, dorsal angle distinct 13
- 13 Mesonotum with prominent pale pollinose stripes and spots, consisting of an anterior dorsomedian slender pair of stripes, a dorsolateral pair of stripes, a pair of spots in the middle of the mesonotum and a pair of rounded spots before the scutellum. Abdomen dark brown to nearly black, the middorsal pollinose triangles nearly equilateral, small. Crossveins and fork heavily infuscated **paraguayensis** (p. 34)
Mesonotum weakly or not striped; if striped, these consist of 3 narrow bare dark stripes or alternating pale and dark stripes, not as above. Wings and abdomen various 14
- 14 Second abdominal tergite with a small middorsal black integumental mark (not evident in dark specimens). Wing nearly hyaline, costal cell hyaline or only slightly tinted yellow. Wing spotting faint to virtually undetectable **rubrithorax** (p. 37)
Second abdominal tergite rarely with a black integumental mark. Costal cell yellow. Wing spotting strong to virtually absent 15
- 15 Wing without spots on fork and crossveins, but all veins broadly though faintly brown margined. Larger species (wing length 11-12 mm) with black pilose palpi, and small middorsal abdominal triangles **fulviventris** (p. 21)

- Wing with small but distinct dark clouds at fork and crossveins. Smaller species (wing length less than 11 mm). Palpi largely or wholly white pilose, and abdomen with large prominent white pollinose middorsal triangles **scythrope** (p. 39)
- 16(11) Wing crossveins and fork of 3rd vein unmarked.....17
 Wing variously marked, with at least a distinct, though sometimes small, cloud at fork of 3rd vein19
- 17 Basal callus nearly as wide as frons, shiny and protuberant. Upper extension forming a widened median callus nearly 1/3 width of frons. Antenna short and stout, without a strong dorsal angle, bicolored. Frons broad, frontal index less than 5.0. Wings faintly smoky, costal cell yellow, appendix very short **callicera** (p. 17)
 Basal callus small, drop shaped to ridge-like, not widened above. Frons narrower, index over 5.0. Wings often strongly fumose anteriorly. Antennae yellow or bicolored, the plate with a strong dorsal angle ...
 18
- 18 Abdomen above black haired with broad golden yellow haired posterior borders, often widened into middorsal golden yellow haired triangles. Frons broader, index 5.0-6.5. Fore tibiae dark and dark haired
 **captiroptera** (p. 18)
 Abdomen above dark pilose with a more or less distinct median row of narrow middorsal triangles, often forming a narrow stripe, but without broad golden yellow haired posterior borders. Frons narrow, index 6.5-9.0. Fore tibiae bicolored, basal 1/3-2/3 pale with yellow hairs ...
 **glandicolor** (p. 24)
- 19(16) Brown species, second abdominal tergite with a small dark integumental spot, and all tergites with narrow yellowish pilose hind margins. Wing spots on fork and all crossveins large and distinct, though pale
 **lerida** (p. 30)
 Without such a dark integumental spot. Abdomen and wings various..... 20
- 20 Ground color of thorax black, and of abdomen deep reddish brown to blackish, steel gray pollinose below. Crossveins distinctly spotted and often tips of longitudinal veins with small clouds. Frons wide, index 3.5-4.3. Posterior borders of abdominal tergites usually narrowly white haired. Antenna bicolored **furva** (p. 22)
 Without the above combination of characters; never with black abdomen..
 21
- 21 Mesonotum and scutellum black in ground color, contrasting with dull yellowish brown abdomen. Wings heavily spotted, with yellow costal cells and extensive anterior and apical brown tinting. Antennae bicolored 22
 Mesonotum and scutellum brown to yellowish, not strongly contrasting with abdomen. Wings and antennae various23
- 22 Appendix at fork short, subequal or less than length of subtending vein segment. Wings heavily spotted, spots at fork and end of discal cell much larger than those at ends of basal cells. Veins R_{2+3} , R_4 and R_5

- often broadly brown margined, the brown along R_4 often extending as a spur from fork to wing margin **spilota** (p. 40)
- Appendix at fork of 3rd vein long, twice or more length of the subtending vein segment. All crossveins with narrow dark clouds and membrane brownish tinted, especially apically. Mesonotum and scutellum with black integument; abdomen dark yellowish brown with traces of narrow pale pilose hind margins on all tergites. Antennae sharply bicolored **changena** (p. 19)
- 23(21) At least the spot at fork of 3rd vein distinct, round; crossveins usually also with more or less distinct spots. Abdomen at most with narrow pale pilose hind margins of tergites or small indistinct pale median hair tufts. Wing membrane hyaline or brownish tinged. Appendix shorter than long subtending vein segment 24
- Wing spots weak and indistinct, often barely visible, irregular. Abdomen extensively yellow pilose. Wing membrane usually at least partly yellow. Appendix twice or more length of short subtending vein segment 25
- 24 Costal cell yellow. Clouds on fork and end of discal cell large, conspicuous, that on ends of basal cells hardly visible. Wing apex with a vague fumose patch. Antenna wholly yellow or the terminal annulus darkened. Abdomen dull yellowish to brown, with vestiges of pale haired middorsal triangles **kroeberi** (p. 28)
- Costal cell hyaline. Clouds on fork and end of discal cell small and faint; none at ends of basal cells. No apical fumose patch, though tips of first 2 or 3 longitudinal veins lightly fumose. Antennal style black, in contrast to yellow basal plate. Abdomen as in **kroeberi** **bipuncta** (p. 16)
- 25(23) Antennae bicolored, the black style contrasting with yellow plate. Wings with clouds on fork and end of discal cell small and faint, the wing yellowish tinted, costal and marginal cells yellow, wing apex smoky. Pleural pilosity gray, abdomen with brownish pilosity but narrow posterior segmental bands of yellowish hairs, slightly widened in the middle into broad triangles. West of Andes **anoriensis** (p. 11)
- Antennae all yellow or terminal annulus blackish 26
- 26 Clouds on fork and crossveins pale but mostly large and distinct. Membrane of costal, basal, discal and bases of marginal (1st R) and submarginal (3rd R) cells generally strongly yellow, the apex of wing beyond end of discal cell largely grayish hyaline, the line between the colors irregular. In some the apices of R_2 and R_{3+4} are weakly clouded. Abdomen with broad yellow pilose bands. Palpi and legs yellow pilose **flavescens** (p. 20)
- Clouds on fork small and weak, generally absent. When present, only evident at fork of third vein. Wings lightly to heavily brown fumose, costal cell orange, often yellow streaks in marginal cell. Abdomen with broad bands and median triangles of yellow hairs, often entirely yellow pilose **captiaptera** (p. 18)

KEY TO STYPOMMISA MALES

- 1 Eyes densely pilose, the upper facets but slightly enlarged and not demarcated from the lower small facets. Abdomen with median pale pollinose triangles2
 Eyes bare, the upper facets greatly enlarged and clearly demarcated from the small facets. Abdomen various 3
- 2 Pale brown species with wings weakly or not spotted and no appendix at fork of third vein. A dark integumental spot on dorsum of second abdominal segment which is otherwise pale yellowish
**rubrithorax** (p. 37)
 Dark brown to blackish species with strongly spotted wings and a short appendix at fork of third vein not as long as subtending vein segment. Second abdominal tergite largely black, at most with reddish patches laterally**scythropha** (p. 39)
- 3 Appendix at fork of third vein long, clearly longer than the short subtending vein segment4
 Appendix short or absent, if present, equal or shorter than long subtending vein segment5
- 4 Wings strongly spotted at fork and all crossveins and all veins more or less brown margined. Coxae with blackish integument. Mesonotum and abdomen dark brown, mainly black pilose with but traces of pale pilose segmental bands on abdomen **changena** (p. 19)
 Wings with at most a trace of a spot at fork, the fore border more or less strongly brown tinged but veins not as above. Coxae with pale yellowish integument. Mesonotum and abdomen orange brown, mainly yellowish pilose, the former pale gray pollinose
 **captiroptera** (p. 18)
- 5 Mesonotum prominently striped.....6
 Mesonotum unstriped.....7
- 6 Black species, the legs wholly black, the wings faintly tinted, with very small clouds at fork and apex of discal cell and no appendix at fork. Abdomen black, bluish pruinose on first 2 segments and with white pilose median triangles and postero- lateral borders of all tergites ...
 **maruccii** (p. 30)
 Brown species, the legs yellowish brown, the wings with large conspicuous brown spots at fork and all crossveins, and a short appendix at fork. Abdomen brown, not pruinose, with a conspicuous middorsal row of pale pollinose triangles and narrow posterior pale margins on all segments**paraguayensis** (p. 34)
- 7(5) Wings clear to faintly brown tinted antero-apically, but without appendix or spots at fork of third vein or crossveins. A light yellowish brown species with a broad diffuse median yellow pilose abdominal stripe ...
 **glandicolor** (p. 24)
 Wings with at least a spot at fork of third vein. Abdomen without a middorsal stripe8

- 8 Wings without an appendix at fork of third vein. Abdomen with at least traces of pale pruinosity on first 2 tergites and some pale pilosity on hind margins of at least the posterior tergites 9
 Wings with a short to long appendix at fork. Abdomen without anterior pruinosity and wholly dark pilose 10
- 9 Black species with black legs, black abdomens, wholly yellow antennae and strong blackish spots at fork and crossveins at distal end of discal cell. Costal cell dark yellow **modica** (p. 32)
 Brown species with brown legs, brown abdomens, bicolored antennae and weak spots at fork and only a trace of spotting at end of discal cell. Costal cell pale yellow **jaculator** (p. 27)
- 10 Wings with a strong dark apical patch which includes fork of 3rd vein and is sharply demarcated from entirely hyaline basal half of 1st submarginal cell (3rd R). Appendix short, shorter than long subtending vein segment Pleural pilosity brown **apicalis** (p. 13)
 Wings with a weak apical patch. Appendix usually longer than very short subtending vein segment. Pleural pilosity gray
 **pequeniensis** or **anoriensis** (pp. 35, 11)

DESCRIPTION OF SPECIES

Stypommisa affinis Kroeber

Stypommisa affinis Kroeber 1929. Zool. Anz. 83(1-4): 116-117; holotype female, Espirito Santo, Brazil (destroyed). Fairchild 1967. Stud. Ent. 9(1-4): 360, fig. 26 (designated lectotype) (Vienna); 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81; 1975. Proc. Ent. Soc. Washington 77(2): 264.

A small reddish brown species with the wings spotted at the crossveins and fork and darkened at the fore border. Callus as wide as frons below. Abdominal tergites with pale hind borders and small pale median triangles.

Female. We have no specimens of this species before us but Fairchild (1967) discussed and figured it. The following is a translation of the original description. Length 11-12.8 mm, antennae 1.2-1.3 mm, wing length 12.4-12.9 mm, wing breadth 4.2-4.3 mm. Extraordinarily like **S. punctipennis**, but the palpi are short black-haired. Frons and frontal triangle (subcallus) shiny brownish yellow, face whitish gray. Eyes unbanded. Frons narrower below than above. Callus tall rectangular, above with reddish brown pointed furrow, hardly separated from red brown median callus. Ocellar tubercle clearly marked, black. Vertexal triangle shining red brown. Thorax entirely red brown with a fine blackish mid-line and 2 whitish lateral stripes. Scutellum paler, white tomentose, pale haired. Pleura pale red brown. Legs pale red brown, including femora and fore coxae, which are thickly white tomentose and white-haired. Abdomen entirely brown red, hind marginal bands moderately broad, enlarged into weak median triangles. All veins somewhat brown bordered at their ends. Espirito Santo.

Male. Not known.

Material examined. Brazil: 2 females, lectotype and paratype (Vienna); Minas Gerais State, 1 female, Sete Lagoas (Copenhagen).

Discussion. The above description is not accompanied by a figure and omits mention of antennae, proportions of frons, or spotting of wings. These supposedly may be inferred by comparison to *S. punctipennis*. Specimens determined as *S. affinis* by Kroeber in Munich and Warsaw belong to 2 different species, neither agreeing with paratypes in Vienna. The material agreeing with the Warsaw material is described herein as *S. xanthicornis* n. sp. The holotype was in Kroeber's collection and destroyed during the war. Since Kroeber labelled at least 2 and possibly 3 distinct forms as *affinis*, a question arises whether the lost type was the same as the paratypes in Vienna. One of these paratypes was labelled lectotype by Fairchild (1967).

Based on Fairchild's notes, the lectotype has a frontal index of 6.0, and the fork of the 3rd vein has a short appendix, all crossveins and tip of anal cell with small but dark clouds, and the antennae rather slender, yellow with a contrasting style. The fore border of the wing is also darkened. Fairchild did not note a shiny subcallus - "stirndreieck...schimmernd"- in any of the Kroeber material studied. The statement in the original description may only indicate a much denuded specimen.

Fairchild also determined 2 females from Poco Alegre, M. G., Brazil, E. Rabello coll. as *S. affinis* but as these are not now before us he may very likely have misdetermined them. The figure in Fairchild (1967) was drawn from the specimen from Sete Lagoas, now in Copenhagen; it agreed closely with the lectotype in Vienna.

We are unable to distinguish this species with certainty from *S. scythropa* or *S. paraguayensis*, and have omitted it from the key.

***Stypommisa anoriensis* n. sp.**
(Figs. 4-6)

Stypommisa n. sp. Wilkerson 1979, *Cespedesia* 8(31-32): 345-356. fig. 34G, H, I.

A slender orange brown species with usually bicolored antennae, yellow legs, yellow pilose abdominal bands and orange brown fumose wings with small clouds on fork of 3rd vein and end of discal cell.

Female. Holotype. Length 11 mm; of wing 10.5 mm. Eyes bare, in life with lower 1/2 olive drab, upper 1/2 brownish. Head structures as figured. Frons and subcallus light brown pollinose, the former with short dark proclinate pilosity. Frontoclypeus and genae light gray, the sparse beard of long whitish hairs mixed with shorter black hairs. There are also sparse gray hairs scattered over the frontoclypeus. Frontal callus dark brown, nearly black, shiny. Tubercle at vertex small, discrete, shiny, with vestiges of at least the anterior ocellus, set at the lower end of a diffuse shiny stripe which extends over the vertex onto the occiput. A postocular fringe of several rows of erect black setae is present, densest in back of frons. Antennae with first 2 segments orange, grayish pollinose, fairly thickly beset with short black setae dorsally, more slender pale setae ventrally. Basal plate of 3rd segment bright orange yellow contrasting with the

densely velvety black terminal annulate portion. Palpi yellowish gray pollinose, beset with black hairs, except at base below and on 1st segment, where they are yellowish brown and longer. Proboscis dark brown, slightly longer than palpi, without prominent sclerotized plates in labella.

Mesonotum and scutellum concolorous, dark orange brown, thinly grayish brown pollinose dorsally becoming denser and grayer towards front and sides. Pronotal and notopleural lobes slightly paler, gray pollinose. Pilosity of dorsum of sparse erect dark hairs and recumbent yellow hairs, the latter forming ill-defined stripes. Notopleural pilosity dark, erect. Pleura with integument concolorous, but thickly pale gray pollinose and sparsely whitish pilose. Coxae concolorous with pleura, white pilose. All tarsi slightly darker. Wings with basicosta pointed, the black setae slightly less dense than on adjoining costa. Fork of 3rd vein with an appendix about length of subtending vein segment in left wing, but a mere stub in right. Costal cell yellow, remainder of wing yellowish brown, the color most intense along fore border beyond stigma, slightly accentuated along veins, and with small diffuse slightly darker clouds around fork and crossveins at end of discal cell. All veins yellowish orange, the setae, where present, black. Halteres with yellow stem and oval orange brown knob.

Abdomen shiny yellowish or orange brown, subtranslucent basally, darker apically. Pollinosity is thick, concolorous, the pilosity dorsally consists of sparse erect black hairs except for sparse narrow yellow pilose posterior bands on segments 2 to 5, slightly widened in the middle on some, and represented by sparse tufts or patches of yellow hairs on segments 1 and 6. These bands are widened at the extreme sides to cover most of the length of the segments. The abdomen beneath is pale yellowish pollinose with sparse pale yellow pilosity throughout its length.

Male. Not known; on further study those listed by Wilkerson (1979) proved to be *S. pequeniensis*.

Type data. Holotype female, Colombia, Antioquia Dept., Rio Anori Valley, La Tirana, 3I-V-1971, elev. 570 m leg. C.H. Porter. The specimen also bears a note as to its eye color, copied above, and a reference to Porter's field notes reading CHP-71-220. JO4. To be deposited in FSCA. Paratypes, 144 females, all from western Colombia, as follows: Choco Dept., 16 females, Rio San Juan-Baudo, II-1976 (R. Wilkerson). Antioquia Dept., 8 females, Rio Anori Valley, La Tirana, IV-VI-1971 (C.H. Porter). Valle Dept., 1 female, Rio Raposo, Buenaventura, XII-1963 (V.H. Lee); 1 female Buenaventura, 7-X-1964, human bait (V.H. Lee); 61 females, Lower Anchicaya Dam, I, III, IV, VII, VIII, IX, and XI-1975 (R. Wilkerson); 2 females, Anchicaya Dam, 10-VIII-73, 500 m elev. (Wilkerson and Young); 6 females, 41 km E Buenaventura, XI and XII-1975, III-1976 (R. Wilkerson); 7 females, Rio Bravo, Playa Rica, below dam at Lago Calima, XII-1975, I and II-1976 (R. Wilkerson); 2 females, Ladrilleros, 30 km N Buenaventura, I-1975 (R. Wilkerson); 12 females, Rio Sabaletas, 4km E Sabaletas, VI, VII, VIII, and X-1975 (R. Wilkerson); 29 females, Lago Calima, 8km below dam, I, III, IV, VII, IX and XI-1975 (R. Wilkerson). Paratypes are in FSCA and the authors' collections. Some of these will be distributed to CAS, USNM, BM(NH) and CNC.

Discussion. The paratypes are quite variable in intensity of color, size (wing length 8.5-12 mm) length of appendix at fork of 3rd vein, and frontal index. Among 25 specimens from western Colombia measured, the frontal index varied from 4.8 to 5.9 ($x = 5.3$), the index of divergence from 1.2 to 1.6 ($x = 1.4$). Other frontal indices are as follow: Antioquia Dept. ($n = 9$), 4.9-5.7 ($x = 5.2$); coastal

Valle Dept. (n = 10), 4.7-6.8 (x = 5.2); and Lago Calima in Valle Dept. 5.3-5.9 (x = 5.5).

This species differs from *S. pequeniensis* in extensively yellow pilose hind marginal dorsal abdominal bands, in more yellowish wings with small but distinct cloud on crossveins at end of discal cell and fork of 3rd vein, and in lacking a demarcated apical infuscated patch on wings. The antennae are usually sharply bicolored in *S. anoriensis* less clearly so or unicolorous in *S. pequeniensis*. From *S. flavescens* the species differs in bicolored antennae, less well marked clouds around end of discal cell, less extensively yellow pilose abdomen, and whitish gray rather than yellow pleural pilosity. See also discussion under *S. flavescens*.

***Stypommisa apicalis* n. sp.**

(Figs.. 1-3, 7-9, 72)

A relatively large brown species with narrow convergent frons and wings with very conspicuous apical patch, similar to members of genus *Diachlorus*.

Female Holotype. Length 12 mm, of wing 12 mm. Eyes bare, green with 2 narrow blackish stripes and upper and lower margins broadly purple (relaxed). Head structures as figured. Frontal index 7.5. Frons dull yellowish pollinose, beset with short black hairs, longest and densest at vertex. Occipital or post ocular hairs black, longest in middle behind vertex. Ocellar tubercle with vestiges of a median yellow ocellus. Frontal callus orange brown. Subcallus concolorous with frons, appearing paler because of lack of black hairs. Frontoclypeus and genae slightly grayer than subcallus, with a sparse brownish beard. Antennae orange brown. The first 2 segments beset with short black hairs, the 3rd segment darkening gradually apically beyond dorsal angle, but style not black and not contrasting with basal plate. Palpi dull orange, almost wholly black haired, slightly shorter than the brown membranous labella.

Mesonotum, scutellum and pleura dull reddish brown, thinly brown pollinose, mostly sparsely dark haired, but with tufts of whitish hairs on pronotal lobes and beneath wings, and scattered short yellow hairs dorsally. Basicosta acutely pointed with at most 2 or 3 strong setae. Wings as figured, the costal cell and stigma strongly yellow, the crossveins at ends of basal cells with small but distinct brown clouds, a large and distinct cloud at end of discal cell and the cloud at fork of 3rd vein lost in the strong infuscation that fills the wing from fork to apex. Fork with an appendix as long as stem. Legs dark reddish brown, almost wholly dark brown to black haired, fore tibiae not bicolored.

Abdomen concolorous with thorax on first 2 or 3 tergites, thereafter becoming darker, almost blackish, dorsally wholly black haired, ventrally clothed entirely with short yellowish white hairs, more conspicuous on hind margins of sternites and posterior lateral corners of tergites.

Male Allotype. Length 11 mm, of wing 10 mm. Eyes holoptic, bare, the area of enlarged facets reddish, occupying about 2/3 of total eye area, the large facets well differentiated and demarcated from the small. A pollinose tubercle sunk between eyes at vertex. Postocular setae longer than in female, curved forward. Antennae more slender than in female, palpi brown, subfalcate, beset with long brown hairs. Color of body, legs and wings as in female, the apical dark patch paler than in holotype, but not paler than in some female paratypes.

Type data. Holotype female, Peru, Cuzco Dept., Quincemil, 2450 ft elev. 16-31-X-1962, (L.E. Pena). To be deposited in FSCA. Allotype male, same data. In FSCA. Paratypes. Peru: 14 females, same locality as holotype, IX-XI-1962; Madre de Dios Dept., 5 females, Avispas, 400 m elev. X-IX-1962, (L.E. Pena)(there are long series from both the above localities in CNC and CUC); 3 females, Tambopata Reserved Zone, 30 km SW Pto. Maldonado, 290 m elev., 6-10-XI-1979, (J.B. Heppner), 5 additional females from this collection are in USNM; 207 females, 5 males, same locality, X-XI-1982 flight trap, (R. Wilkerson). Brazil: Rondonia Terr., 1 female, highway BR319, km 28 24-X-1980 (J. Arias). Mato Grosso State, 1 female, X-1976 (Alvarenga leg). Para State, 1 female, Itinga, Paragominas B.R. 14-I-1965 (L. Gomes). Bolivia: 4 females, Palos Blancos, Alto Beni(river?), 11-15-1976, 600 m elev. (L.E. Pena). Cochabamba Dept., 1 female, Villa Tunari, 240 m elev., 3-6-IX-1983 (R. Wilkerson). Paratypes will be deposited in the above mentioned collections and in CAS, INPA, Manaus; Mus. Goeldi, Belem; BM(NH) and collections of the authors.

Discussion. Paratypes range in wing length from 10.0 to 13.5 mm and in body color from cinnamon brown with light brown legs to nearly black with slightly bluish black abdomens and black legs. There is considerable variation in the extent and intensity of the wing pattern, specimens from Cuzco Dept. Peru being the palest while some from Madre de Dios Dept. are usually darker. The few Brazilian specimens seen are quite dark, while the 4 from E. Bolivia are like those from Cuzco. Extremes are quite different appearing, though all intermediates occur in our long series from Rio Tambopata. The males from Tambopata are quite uniform, dark brown with nearly black legs and largely black pilosity. The allotype from from Cuzco Dept. is lighter, like females from the same locality. Antennae of all have the same distinctive shape, with the dorsal angle of basal plate near the middle of the plate. The antennae may be dark brown to light orange with the style contrasting or not, or in nearly any combination.

The species is abundantly distinct from all other described species in its combination of ridgelike callus, unique antennae, banded eyes and strong apical wing patch. Only *S. pequeniensis* has a weak apical wing patch, but is smaller and with different frons and antennal shape, as well as having bicolored fore tibiae. *S. spilota* n. sp. has rather heavily marked wings, but the clouds on fork and crossveins are much larger and more prominent, the apical patch faint and diffuse, the fore tibiae clearly bicolored, and the antennae and frons quite different.

All specimens seen have been taken in the months of September to November and January, either netted or in flight traps, apparently always in areas of high rainfall.

***Styppommisa aripuana* n. sp.**
(Figs.. 10-12)

A small brown species with a narrow frons, bicolored antennae, white haired palpi and yellowish brown legs. Wings hyaline, unspotted. Abdominal integument dark brown, the 1st two segments pale, semi-translucent, with a middorsal row of small pale triangles, and when viewed at an angle from behind, with rows of large sublateral pale pruinose spots and a row of middorsal pruinose triangles on segments 1 to 5.

Female Holotype. Length 10.5 mm, of wing 9.5 mm. Eyes bare, pattern not recorded, probably greenish black in life. Head characters as figured. Frontal index 4.7, index of divergence 0.91, antennal index (basal plate/style) 1.25. Frontal callus yellowish brown, its surface rugose. Ocellar tubercle flat, bare, not protuberant, without clear ocelli, surrounded by a diffuse area of dark pollinosity. Remainder of frons dark yellowish pollinose, without pilosity. Postocular setae short and pale, in several irregular rows. Subcallus thinly pollinose, slightly paler than frons, its median groove widened in the middle and with a small bare area. Frontoclypeus and genae with reddish integument, gray pollinose, very sparsely gray pilose. Pedicel and scape orange, grayish pollinose, dark pilose above, paler below. Basal plate orange, slightly dusky at distal end, the style deep black. Palpi yellowish orange, gray pollinose, both segments wholly pale pilose, the hairs rather short. Proboscis with stylets 1/2 longer than palpi, the theca blackish, subshiny, the labella brown, membranous.

Mesonotum with brown integument, subshiny dorsally, yellowish gray pollinose, with vague indications of a broad median stripe and dorsolateral darker stripes and a darker median streak on posterior third. Pilosity of short sparse yellowish and dark hairs, forming vague stripes. Scutellum concolorous, its apex paler, reddish, thinly gray pollinose, sparsely yellowish pilose. Pleura and coxa, including notopleural and pronotal lobes, slightly paler, gray pollinose, sparsely whitish pilose. Legs with entirely yellow integument, the coxae and femora wholly pale pilose, the tibiae pale pilose on mid pair, dark pilose on fore and hind pair, except basally on fore pair. All tarsi dark pilose. Wings hyaline, the costal cell weakly yellowish tinted, stigma yellow, veins yellowish brown, no appendix at fork of 3rd vein, and only the faintest indication of dark clouds at fork or any crossveins, not visible without high magnification. Basicosta pointed, with 1 or 2 black setae. Halteres brown, the stem slightly paler.

Abdomen with integument of first 2 tergites semitranslucent yellow at sides, the first dusky beneath scutellum, the second with a broad median inverted V-shaped dark brown mark, and posterior border brown. Remaining tergites brown with paler hind borders and narrow lateral margins. Pollinosity is thin, dark basally and pale on margins of tergites, and forming large median pale triangles on tergites 2 to 6, plus a small spot on 1. Pilosity sparse and short, dark on dark areas, pale on pale areas. Superimposed on this pattern, only visible from directly behind, is a pattern of white pruinosity consisting of large dorsolateral connected patches forming a weakly interrupted pair of wide stripes and a median row of unconnected triangles. The hind borders of all tergites are also white pruinose. Beneath the abdomen is entirely whitish pollinose and sparsely pale pilose.

Male. Not known.

Type data. Holotype female, Brazil, Mato Grosso State, Rio Aripuana, Humboldt, 59°27'W, 10°10' S, 12-16-VIII-74, flight trap (D.G. Young). To be deposited in Museu Emilio Goeldi, Belem, Para, Brazil.

Paratypes, 60 females, same data as holotype, In FSCA, MCZ, CNC, BM, USNM, CAS and collections of the authors.

Discussion. We had at first thought this taxon was but a variant of *S. rubrithorax* to which it is very similar. It differs, however, in consistently narrow frons, index 4.6 to 5.0 ($x = 4.8$, $n = 10$), a slightly less divergent frons, index 0.9 to 1.3 ($x = 1.05$), and relatively longer antennal style in relation to the basal plate of antenna, index 1.2 to 1.5 ($x = 1.3$). It also entirely lacks an appendix at

fork of 3rd vein and seldom shows any trace of a wing spot there or elsewhere. The abdomen when viewed from behind shows a striking dorsolateral row of large white pruinose spots, totally lacking in any other species we have seen. The paratypes vary somewhat in intensity of coloring and size, wing length varying from 8.0 to 9.5 mm.

***Stypommisa bipuncta* Fairchild**
(Figs. 13-15, 73)

***Stypommisa bipuncta* 1979**, in Wilkerson 1979, *Cespedesia* 8(31-32): 334-335, Colombia, Valle, Rio Frio (MCZ).

A small pale brown species with the hyaline wings bearing two small brown spots, on fork of 3rd vein and on crossveins at apex of discal cell.

Female. Length 9.5 mm, of wing 10 mm. Eyes bare, color in life not recorded. Head structures as figured. Frontal index 5.4. Frons yellowish gray pollinose, darker and sparsely black-haired at vertex. Frontal callus and median ridge shiny, dark brown, as is ocellar tubercle. Subcallus concolorous with frons, frontoclypeus and genae paler, more grayish. The sparse beard whitish. Palpi yellowish tan, beset with short black hairs. Antennae orange yellow, the scape and pedicel beset dorsally with reddish brown hairs, the style black, contrasting with basal plate. Proboscis brown, membranous, the stylets longer than the palpi.

Mesonotum pale cinnamon brown in ground color, the scutellum yellowish at apex, both beset with mixed semi-erect black hairs and recumbent shiny pale hairs. Pleura paler, whitish pollinose and white haired. Legs yellowish brown, the foretibiae apically darkened and black haired, the foretarsi blackish. Mid legs missing. Wing including costal cell hyaline, slightly brownish tinted in anteroapical area, and with pale brown clouds around fork of 3rd vein and crossveins at apex of discal cell, but not on basal crossveins. Appendix at fork slightly shorter than long subtending vein segment. Basicosta with sparse black macrotrichiae.

Abdomen yellowish brown, subshiny, denuded, beset with short dark hairs above, pale hairs beneath. Tergites 4-6 bear remnants of pale-haired middorsal broad triangles, apparently extended laterally on hind borders of segments.

Male. Not known.

Material examined. Holotype female and three female paratypes, Colombia, Valle del Cauca, Rio Frio, La Carmelita 13-VI-1942 (J. Renjifo).

Discussion. Only the holotype bears a date, and it is the only specimen retaining a whole antenna. Some of the paratypes are otherwise better preserved, showing the abdomen with a dorsal row of broad median sparsely pale-haired triangles. In one the frontal calli are black. One wing of the holotype is slide mounted No. St-36. We have seen no additional specimens.

The species differs from *S. venosa* as treated here, in having a discrete basal frontal callus rather than an evenly tapered clavate keel, in pale forecoxae, and in nearly wholly glass clear wings except for the discrete small clouds on fork of 3rd vein and apex of discal cell. In *S. venosa* there is considerable diffuse brownish infuscation of the wings, larger clouds on fork and apex of discal cell, small clouds around ends of basal cells and a yellow costal cell.

***Stypommisa callicera* (Bigot)**
(Figs. 16-18)

Tabanus callicera Bigot 1892, Mem. Soc. Zool. France 5: 686 (BM(NH)).

Fairchild 1956, Smiths. Miscell. Colls. 131(3): 12; 1967, Pacific Ins. 9(2): 244, fig. 3 (Places in *Stypommisa*).

Stypommisa callicera: Fairchild 1971 Cat. Dipt. Amer. S. of U.S., Fasc. 28: 81.

A small unmarked light brown species with wings unspotted but lightly brownish tinted in costal cell and anteroapically, frons broad for the genus and with stumpy bicolored antennae.

Female. Translation of original description: Female, length 9.5 mm. Antennae tawny, the third segment black at extremity, without concavity above and with an obtuse very little projecting tooth. Palpi tawny, brownish above and at the extremity. Face dull reddish sprinkled with whitish hairs. Beard short, white. Frons dull gray, callosity black, narrow, linear, abruptly dilated and nearly quadrangular below. Vertex with very small ocelli. Thorax and scutellum reddish tawny, pleura with whitish pollinosity. Calypters and halters reddish brown, the club pale tawny at its extremity. Legs reddish, extremity of tibiae and tarsi black. Wings very pale grayish, stigma a little reddish, fork of 3rd vein with very short appendix. Brazil, one specimen.

Male. Not known.

Material examined. Brazil. Rio de Janeiro State, 1 female, Rio de Janeiro, II-1939; 1 female, Teresopolis, Parque Nacional da Serra dos Orgaos, 1000 m elev., 17-IX-1948 (P. Wygodzinsky)

Discussion. The type in British Museum is somewhat rubbed and shrunken, perhaps collected in alcohol. There are sparse macrotrichiae on the basicosta. The head characters are as figured by Fairchild (1967), the mesonotum light cinnamon brown, pleura gray pollinose and white-haired. Fore tibiae obscurely bicolored, due mainly to vestiture rather than integumental color, the remaining legs cinnamon brown with darker tarsi. Abdomen yellowish brown, completely denuded.

The female from Rio was compared to the type in 1964 and labeled "not in agreement though close." It measures 7.5 mm in length. The female from Teresopolis measures slightly over 10 mm in length and agrees both with Bigot's description and with Fairchild's (1967) figure and brief description. We believe now that the Rio specimen above is probably only an undersized specimen of the species. The eyes (relaxed) are without pattern, probably greenish in life. Both specimens above have the yellowish brown abdomen darkened apically, apparently due to a blood meal, almost entirely but sparsely clothed with short dark hairs, but with a few pale hairs on the midlines of some tergites. The fore femora and apical halves of foretibiae are quite dark, thickly black haired, contrasting with the white haired basal halves of foretibiae in the Teresopolis specimen, though in the Rio specimen this is not so evident. In both specimens the wings are lightly yellowish brown tinted, the stigma darker anteriorly and with the costal cell darker yellow, the stigma orange brown. There is a short appendix in the wings of both specimens, but no vestige of wing spotting. The frontal indices are 4.0 and 4.4, the divergence indices 1.1 and 1.2, and the antennal indices 1.4 and 1.6.

The very wide, square basal callus, nearly as wide as frons, and the somewhat basally inflated palpi suggest that this species may be related to *Stenotabanus*, though the basicostas bear a few macrotrichiae in both specimens.

The species seems most similar to *S. fulviventris* in general appearance, but is smaller, frons broader, antennae shorter and strikingly bicolored, and the abdomen appears to lack all but faint traces of pale median triangles or pale pollinose hind margins of tergites, evident in all specimens of *S. fulviventris* seen.

***Stypommisa captiroptera* (Kroeber)**

(Figs. 19-21, 74)

Tabanus (Macrocornus) captiropterus Kroeber 1930, Zool. Anz. 87: 10, fig. 8, holotype female, Venezuela (Vienna) [examined].

Stypommisa captiroptera: Fairchild 1966, Stud. Ent. 9(1-4): 364; 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81. Hogue and Fairchild 1974, Rev. Biol. Trop. 22(1):22, Costa Rica. Wilkerson 1979, Cespedesia 8(31-32): 355-337, fig. 112, female, male, Colombia. Philip 1977, Proc. Ent. Soc. Wash. 79(1): 28.

Stypommisa* (sic) *flavescens Barretto 1957, Rev. Brasil. Malar. (1956), 8(1): 82, male, British Guiana. Not *flavescens* Kroeber 1930.

Stenotabanus xenium Fairchild 1947, Ann. Ent. Soc. Amer. 39(4): 568, pl. 1, fig. 5,a,b, female, Panama (MCZ).

A light yellowish brown species, the wings rather evenly fumose, darkest along foreborder and apex, the fork of 3rd vein with an appendix longer than subtending vein segment and with a small, usually discrete, dark cloud, often faint, but not clouds on apices of discal or basal cells. Pilosity of pleura and abdomen yellow below, and forming broad segmental bands and large middorsal triangles above. Legs yellow, mainly yellow pilose, except for usually dark pilose hind tibiae and all tarsi.

Material examined. Fairchild has studied Kroeber's type in Vienna and the male from British Guiana reported by Barretto. Both of us have studied the following specimens: Nicaragua: 1 female, Eden, 4-VI-1922 (W. Huber). 1 female, Jinotega, Rio Potecas, 10-VIII-1953 (J. Boshell). Costa Rica: 1 female, Finca Margarita, V-1938. Limon Prov., 2 females, Finca La Lola, VII-1963(Hogue); 1 female, Guapiles, 18-VI-1965. Panama: Bocas del Toro Prov., 1 female, Almirante Yellow Fever Sta., 16-V-1951 (H. Trapido); 2 females, Miramar, UV light trap, 29-V and 11-VII-1979 (H. Wolda). San Blas Prov., 6 females, Rio Mandinga-Rio Tangandi Yellow Fever camp, 1-27-V-1957 (P. Galindo). Darien Prov., 1 female, Cana, VII-1965 (O.R. Henriquez); 1 female, Rio Canita, Rio Bayano, 13-VIII-1949, at light (P. Galindo). Colon Prov., 1 female, Rio Pequeni, 23-VI-1944, (Fairchild). Colombia: Choco Dept., 1 female, Teresita, 26-VI-1967 (D.G. Young leg.); 1 female, Curiche River, 4-VIII-1967 (D.G. Young leg.). Antioquia Dept., 2 males 1 female, Rio Anori Valley, La Tirana 9-11-1971 (C.H. Porter); 1 female, vic. Zaragoza, IX-1970 (D.G. Young). Valle Dept., long series from various localities as listed in Wilkerson 1979 under *S. captiroptera*. Ecuador: Pichincha Prov., 1 female Tinalandia, E of Alluriquin, 4-8-V-1976 (T.E. Rogers); 2 females, Quito, 1930, (R. Benoist). Peru: Cuzco Prov., 1 female, Quincemil, 16-31-X-1962 (L. Pena). Amazonas Prov. 1 female, Iquitos, III and IV-1931 (R. C. Wilkerson). Bolivia: Alto Beni. 2 females, S. Inicua river, 15-18-1-1976, 1100 m (L.E. Pena). Brazil: Para State, 13 females, Municipio Benevides, Fazenda Morelandia, 23-VI-

1981, horse bait and flight trap (G.B. Fairchild); 1 female, Belem, 7-8-VI-1971; 1 female, APEG Forest, Belem, VII-VIII-1974 (D. G. Young); 1 female, Bujaru, 3-XII-1979 (R.B. Neto); 1 female, Belem, 1949, (R. Damasceno leg.); 1 female, Marajo Id., no date. 1 female, VII-1931 (R. C. Shannon). Amazonas State, 9 females, Manaus, Reserva Ducke, I, II, III, V, VII-1978 (J. Arias and N. Penny). Rondonia State, 3 females, Vilhena, 6-XI-1979 (J. Arias). In addition Fairchild determined a specimen from Chiapas Mexico, as *Stenotabanus xenium* for Philip, as reported by him (1977).

Discussion. As can be seen by the above, the species ranges widely, from Mexico, Nicaragua and Honduras south to Ecuador west of the Andes and to Bolivia and Para, Brazil, east of the Andes. There is some geographical variation, specimens from Para and the Amazon basin tending to be darker than those from west of the Andes and Central America. The species usually can be separated from *S. pequeniensis* by the yellow abdominal pilosity and lack of a clear demarcation of the dark apical wing patch, and from *S. flavescens* by lacking any trace of dark clouds at the apex of discal cell. *Stypommisa anoriensis* is very similar in wing and body color, but the antennae of *S. anoriensis* are smaller, shorter, and sharply bicolored, with yellow basal plate and black style.

The male was described by Wilkerson (1979), who also figured the wing of the female, while Fairchild (1947) figured the head characters of the female. There is some indication that the species is crepuscular or even nocturnal, as notations on labels often state that the specimens were taken at light or in the evening. The eyes in life are unpatterned, dull green to golden bronze, rarely with a faint median dark stripe.

***Stypommisa changena* n. sp.**
(Figs. 22-24, 75)

A moderate sized dull brown species with wings both spotted and the veins brown-margined, and the abdominal tergites with obscure pale hind margins or small median pale hair triangles.

Female. This species is best described by comparison with *S. lerida*. It is a more slender species and the overall coloration is darker. The scutellum is darker blackish brown, (with at least the apex usually red in *S. lerida*). The frons is slightly narrower in *S. changena* (frontal index 5.3-6.2 [$n = 8$, $x = 6.0$] vs 4.5-5.3 [$n = 7$, $x = 4.9$] for *S. lerida*). The indices of divergence (frontal width at vertex divided by frontal width at base) are not significantly different, ranging from 1.1 to 1.5 in both species. The wings of *S. changena* have the appendix usually longer than the subtending vein segment due to shortness of the latter, while in *S. lerida* the vein segment is often longer than the appendix. The wings in *S. changena* have a noticeable anteroapical brown tinting and all the veins are narrowly brown margined. In *S. lerida* the wing is lightly and evenly tinted without noticeable darkening apically and the veins not obviously brown margined. *Stypommisa lerida* has a prominent but diffuse median blackish integumental spot on abdominal tergite 2, wholly lacking in *S. changena*, where the abdomen is uniformly dark brown. *Stypommisa changena* has but faint traces of pale hair fringes on the tergites, while these are prominent in *S. lerida*. The two species have different times of flight, February, March and April for *S. lerida*, May to November for *S. changena*. The eyes of both species are green with a single purplish transverse stripe.

Male. Color and wing pattern as in the female. Eyes with enlarged upper facets bare, well differentiated from small facets, but without a sharp line of demarcation, the larger facets occupying about 2/3 to 1/2 total eye area. Small facets extend in a narrow band to vertex behind and there is a small tubercle sunk to eye level at vertex with vestige of at least the anterior ocellus. The occiput bears a sparse fringe of long forwardly curved dark hairs.

Type data. Holotype female, Panama, Bocas del Toro Prov., Rio Changuena Yellow Fever Camp, 2400 ft. elev., 26-IX-1961, (G.B. Fairchild). Allotype male, Panama, Chiriqui Prov., La Fortuna, 10-VI-77, blacklight trap (H. Wolda) [collected in alcohol]. Paratypes: 47 females same locality as holotype, various dates in August and September 1961, human bait and Shannon trap. Panama: Bocas del Toro Prov., 3 females, Rio Claro-Rio Changuena, 910 m elev., 20-21-V-1966 (C. Meyers); 3 females, Rio Uri, Changuinola, VIII-IX-1968 (R. Hartmann); 1 female, Robalo trail, 6500 ft., 6-VIII-47. Chiriqui Prov., 1 female, Calderas-Chiriquito trail, 600-1400 ft elev., in tree tops, 26-X-5-XI-1955 [genitalia on slide RW-300]; 3 males 5 females, same locality as allotype, U.V. light trap, IV-VIII-1977 and VII-VIII-1978. Costa Rica: Puntarenas Prov., 1 male 1 female, Monteverde area, 1400-1700 m elev., 6-14-VI-73 (Erwin and Hevel); 1 female, same locality, 21-V-76 (Wasbauer). Alajuela Prov., Chomogo area, 1620 m elev, 13-VI-73 (Erwin and Hevel). Cartago Prov., 1 female, Hacienda Moravia de Chirripo, 7-10-VII-1964 (R. McDiarmid) [genitalia on slide RW-299]; 1 female, Carillo, no date (C. F. Underwood) (wing on slide St. 32). We have also seen 19 more specimens from Fortuna, Chiriqui which are in too poor condition to be labelled as paratypes. There is also a female paratype, Costa Rica, Heredia Prov., 19-20-VII-1975, Fisher coll. in C.B. Philip's collection in CAS, and 26 females from Monteverde area in U.C., Berkeley which we believe are this species, though they are not now before us.

***Styppommisa flavescens* (Kroeber)**

(Figs. 25-27, 76)

Styppommisa flavescens Kroeber 1930. Zool. Anz. 86: 249, holotype female "Peru" (destroyed).

Styppommisa flavescens: Fairchild 1967, Stud. Ent. (91-4): 359 (1966), selected neotype (Munich); 1971, Cat. Dipt. Amer. S. of U.S., Fasc. 28: 81; 1975; Proc. Ent. Soc. Washington, 77(2): 264, Ecuador.

Styppommisa abdominalis Philip 1960, Proc. Calif. Acad. Sci., Ser. 4, 31(3): 88, holotype female [examined]. Fairchild 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81.

A predominantly yellowish species with yellowish pleural and abdominal pilosity, the wings extensively yellowish tinted, with fuscus clouds around end of discal cell and fork of 3rd vein, and more or less infuscated anteroapical area. Antennae yellow to orange, with at most the terminal annulus infuscated. Legs wholly yellow, fore tarsi only slightly dusky.

Material examined. Colombia: Putumayo Int., 1 female, Mocoa, 650 m elev., Very Wet Tropical Forest, flight trap with CO₂, 15-IV-1976 (R. Wilkerson). Ecuador: Pastaza Prov., 8 females, 17.2 km. SE Puyo, 5-XI-1981 (R. Wilkerson). Zamora Prov., 1 female, 12 km S Zamora, bait horse, 5-7-III-1982 (R. Wilkerson). Peru: Cuzco Prov., 3 females, Quincemil, 753 m elev. X-1962 (L.E. Pena).

Discussion. This species has a limited distribution along the eastern base of the Andes from Colombia to Peru. It is very similar to both *S. captiroptera* and *S. anoriensis*, being generally separable from the first by having the 1st marginal cell (1st R) largely yellow, and fuscus clouds around both crossveins at end of discal cell and fork of 3rd vein. From *S. anoriensis* it differs chiefly in lacking contrastingly black antennal styles. We suspect that *S. anoriensis* and *S. flavescens* may be only trans- and cis-andean subspecies of a single taxon, but lack specimens from enough localities to be certain.

Fairchild (1967) studied specimens determined by Kroeber in Munich and selected one from unknown locality (mislabelled Espirito Santo) as Neotype. The type was from Peru, presumably from Callanga in the Pinipini Valley, but was in Kroeber's collection and destroyed during World War II. Subsequently (1975), Fairchild was able to study another Kroeber specimen from Sta. Inez, Ecuador in Warsaw which appears to be the same. Both these Kroeber determined specimens agreed with a female from Peru, Cuzco, Quincemil, which we also found to agree with the type of *S. abdominalis* Philip on loan from Dr. Philip.

***Stypommisa fulviventris* (Macquart)**
(Figs. 28-30)

Tabanus fulviventris Macquart 1846, Dipt. Exot., Suppl. 1, p. 164. holotype female, Brazil [BM(NH)] [examined].

Stypommisa fulviventris: Kroeber 1930, Zool. Anz. 86(9-10): 254-255, fig. 3. Fairchild 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81.

Tabanus ferruginosus Walker 1850, Dipt. Saunders. 1: 40, holotype female, South America [BM(NH)] [examined]. NEW SYNONYM.

Tabanus (Macrocornus) ferruginosus: Kroeber 1930, Zool. Anz. 87(1-2): 2, 4-5, fig. 2, Espirito Santo.

Stenotabanus ferruginosus: Fairchild 1956, Smiths. Miscell. Colls., 131(3): 16.

Stypommisa ferruginosa: Fairchild 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81.

A small grayish brown species with lightly tinted but unspotted wings, slender antennae, and a faint row of small pale middorsal abdominal triangles.

Female. Length 11.5 to 13 mm, of wing 12 to 13 mm. Eyes bare, no pattern evident. Head structures as figured. Frontal index of the type of *S. fulviventris* 5.8. Frons grayish brown pollinose, with sparse short recumbent brown hairs. Callus and tubercle orange brown, the latter with vestiges of ocelli. Subcallus and upper genae concolorous with frons, becoming steel gray on frontoclypeus and lower genae. Tentorial pits prominent. Beard sparse, gray. Antennae orange yellow, first 2 segments black haired, style black, contrasting. Palpi pale brown, black haired, nearly as long as brown pollinose proboscis. Mesonotum brown, brown pollinose, with notopleural sutures faintly paler, beset with sparse short erect black hairs and short recumbent pale hairs. Scutellum and notopleural lobes concolorous, pleura, sternum and coxae paler, more grayish, sparsely pale haired. Legs yellowish brown, tarsi darker, fore tibiae yellow haired basally, black-haired apically. No hind tibial fringe. Wings rather long and slender, appendix present, variable in length. Wings faintly brownish, stronger along veins, but no definite clouds on crossveins or fork. Costal cell and stigma yellow. Basicosta with 6 to 10 setae. Halteres pale brown. Abdomen brown, slightly paler on anterior tergites,

the hind margins of tergites not noticeably paler. Hairs black, except for small medial pale-haired triangles and posterolateral corners, the hairs easily lost. The 5 specimens measured have frontal indices of 5.2 to 5.8, divergence indices of 1.2 to 1.4 and antennal indices (Basal plate/style) of 1.0 to 1.3. They agree among themselves otherwise. One of these was compared and agreed with Macquart's type in London, and was found in good agreement with Walker's type on loan in 1983. This is the specimen figured here.

Male. Not known.

Material examined. In addition to the types of both names: Brazil: Rio de Janeiro State, 1 female, Itatiaya, Estacion Biologica, 1670 m elev., 15-I-1936; 1 female, Itatiaya, 800 m elev., VI-1931 (D. Mendes); 1 female, Lago Azul, Itatiaya, 750 m elev., 17-31-VIII-1958 (R. Barth).

Discussion. Recent reexamination of the respective holotypes of *Tabanus ferruginosa* and *Tabanus fulviventris*, kindly lent to us by J.E. Chainey indicates that they are not separable. Neither type is in optimum condition, but all diagnostic structures are present, and both agree equally well with one of our available specimens from Itatiaya. Two other specimens from the same area vary slightly in size and distinctness of abdominal pilose markings, but are believed to be conspecific. Our specimens are labelled Dec., Jan., and June, all in different years. Kroeber (1930) reported one female of *S. ferruginosus* from Espirito Santo, but whether his description and figure was drawn from the type in London or his specimen is unclear.

***Stypommisa furva* (Hine)**
(Figs. 37-39, 77)

Tabanus furvus Hine 1920, Ohio J. Sci. 20(6): 189, holotype female, Songo, Bolivia (Columbus) [examined].

Stenotabanus furvus: Philip 1958, J. Kansas Ent. Soc. 31(2): 180; 1961, Pan. Pac. Ent. 37(2): 112. Peru, Bolivia, makes *S. maculipennis* Kroeber a synonym.

Stypommisa furva: Philip 1969, Acta. Zool. Anz. 83(104): 52-53.

Stypommisa maculipennis: Kroeber 1929, Zool. Anz. 83(1-4): 117, Bolivia holotype female (destroyed); 1930, op. cit. 83(9-10): 253. Fairchild 1966, Stud. Ent. 9(1-4): 359-360, fig. 24.

A dull blackish species with heavily spotted wings, largely brown legs with fore tibiae bicolored, frontal callus quadrangular, abdomen with narrow pale pilose segmental margins.

Female. Length 11 to 12 mm, of wing 11 to 12 mm. Eyes bare or sparsely short pilose, blue green in life, unbanded (Kroeber 1929) or with a single dark band (Philip 1969) (but see under discussion below). Head characters as figured. Frontal index 3.5 to 4.3 ($n = 12$, $x = 4.0$). Frons brownish gray pollinose, callus black. Tubercle at vertex shiny black with vestiges of 3 yellowish ocelli. Subcallus, frontoclypeus and genae brownish gray, beard gray. First 2 antennal segments yellow, gray pollinose, densely short black haired. Third segment with basal plate yellow to orange, the style black, contrasting. Palpi light brown

pollinose, black haired. Proboscis brown pollinose, considerably exceeding palpi, the labella large and membranous.

Mesonotum and scutellum brownish black, thinly gray pollinose, sparsely beset with mixed dark and pale hairs, unstriped. Notopleural lobes and, variably, sides of mesonotum and scutellum yellowish brown. Pleura blackish, gray pollinose, largely pale-haired. Legs with coxae, fore femora, basal halves or less of mid and hind femora blackish, remainder of femora and most of mid and hind tibiae light to dark reddish brown, more or less darkened apically. Fore tibiae bicolored, basal third yellowish, white haired, the remainder black and black-haired, as are all tarsi. Wings as figured, sometimes with small clouds near ends of all veins, or faint brown margins along apical segments of some or all veins, in addition to the large brown clouds on all crossveins and fork. Costal cell yellowish. Fork with a short appendix, usually not longer than adjoining short vein segment. Abdomen dark brown to black, often vaguely lighter and more reddish on sides of tergites 2 and 3, dark gray pollinose, and with some bluish-white pruinosity on first 2 tergites when viewed from behind. There are sparse pale-haired fringes indistinctly widened in middle and at sides on all tergites; otherwise dorsum wholly black haired. Venter reddish to black, gray pollinose, entirely sparsely pale-haired.

Male. Not known.

Material examined. All from Bolivia: 6 female paratypes of *T. maculipennis* in BM(NH); 4 females labelled "Sammlung Hartmann," no locality, one det. Kroeber 1930, in Munich; 2 females Songo, one the holotype of *T. furvus*, the other unlabelled, in Ohio State Univ. coll. Cochabamba Dept., 3 females, Cristal Mayu, VIII-1949, IX-1956 (L.E. Pena) (1 female compared and agreeing with paratype of *T. maculipennis* in BM(NH), another compared and agreeing with holotype of *T. furvus*); 8 females, El Palmar, Chapare, XI-1956 and X-1943 (L.E. Pena); 240 females, km 95 on road from Cochabamba to Villa Tunari, 1800 m elev., 2-IX-1983 (R. Wilkerson). La Paz Dept., 1 female, Mapiri, S. Carlos, 800 m I-1903; 1 female, Yungas von Coroico, 1800 m X-1906; 1 female, ?Yungasweg 1200-2500 m X-1906; 2 females, Yungas La Paz, Yolera a Caranavi, X-1968 (S. Coscaron); 1 female, N Yungas Prov., Caranavi, IX-1971 (J. Velasco); 5 females, S Yungas Prov., S. Antonia, XI-1971 (J. Velasco); Dept. not known: 1 female, Amazon Basin, 1914, in Paris Mus. Others seen but not now before us. 5 females, Chapare, El Palmar IX-1956 (L. Pena) in CNC; 1 female, Osuntom, VII-1921, Mulford Exped. det. *maculipennis* by Stone, in USNM; 1 female, Rio Colorado, IX-1921 (Mann), in USNM; 1 female, Cordillera, 3000 m XII-1902

Discussion. Little variation in structure is shown, but intensity of color in body and wings varies considerably. The eye of a specimen preserved in alcohol from San Pedro, Coroico is figured (Fig.). It is bronzy green with a dark median line which is well defined below but diffuse above, giving the impression that upper half of eye is darker than lower half. *S. furva* is very similar to *S. hypographa neofurva* Philip, a largely sympatric species, but differs in the structure of frons, in having evident dark clouds at ends of basal cells and white pilose posterior margins to all tergites. The species ranges from Peru, Dept. Huanuco, south to Cochabamba, Bolivia, along the wet eastern slopes of the Andes up to 3000 m. Our records, and those in the literature, are all for the months of August to January, inclusive.

Stypommisa glandicolor (Lutz)

(Figs. 40-45)

Tabanus glandicolor Lutz 1912, Comm. Linh. Electr. Estrat. Mato Grosso-Amazonas, Anexo 5, Hist. Nat., Tabanideos, p. 5, fig 3, lectotype female, Mato Grosso, Brazil (Rio de Janeiro). Fairchild 1961, Mem. Inst. Oswaldo Cruz 59(2): 231 (designates lectotype).

Stypommisa glandicolor: Fairchild, 1971. Cat. Dipt. Amer. S. of U.S., Fasc. 28: 81.

A small slender pale yellowish brown species with very narrow frons, threadlike callus, hyaline or faintly tinted and unspotted wings, and a faint pale pilose mid abdominal stripe or series of connected triangles.

Female. Wing lengths of 8-12 mm, and body lengths slightly greater. Eyes bare, greenish black, without pattern (relaxed). Frontal indices 6.0-9.3 and divergence indices 1.4-2.0. Frontal callus threadlike or oval below and threadlike above. Ocellar tubercle present, usually inconspicuous, seldom showing vestiges of ocelli. Basicosta pointed, with few to numerous dark setae, rarely bare, always with setae sparser than on adjoining costa. Integument of thorax and scutellum yellow to cinnamon brown, the scutellum often paler. Vestiture gray, yellowish or brownish. Legs yellow to pale brown, the fore femora sometimes dusky, tarsi often darker and fore tibiae obscurely to sharply bicolored. Antennae yellow to orange, the style concolorous to contrastingly black. Wings yellowish to smoky, rarely nearly entirely clear and rarely with a faint cloud at fork. Appendix at fork inconsistent, usually short, often absent. Abdomen yellowish to brown, dark pilose dorsally, pale ventrally, and generally with at least vestiges of a middorsal pale pilose stripe or series of contiguous triangles which are easily lost and not underlain by pale pollinosity.

Male. Available males, 1 from Costa Rica, 2 from Amazonas, 1 from Peru, are structurally indistinguishable, though the Costa Rican specimen is slightly darker. The eyes are bare, holoptic, the enlarged upper facets well differentiated but not sharply demarcated from the small facets and without an occipital border of small facets. There is a small tubercle sunk between the eyes at vertex. The palpi are correct, pointed, and clothed with long pale hairs. Basicostas are pointed, bare, or with a few black setae.

Material examined. In addition to Lutz' types the following specimens have been studied. Costa Rica: Puntarenas Prov., 2 females, Palmar, no date, (P. and D. Allen); 1 female 1 male, Osa Peninsula, 1.8 mi W of Rincon, 27-11-1971 (Donahue and Hogue); 2 females, same locality, III-1965 (McDiarmid). Colombia: Meta Dept., 8 females, Restrepo, III-1935 (P.C.A. Antunes); 2 females, Villavicencio, carretera al puente Guayuriba, 12-III-1939. Venezuela: Bolivar State, 2 females, San Juan Maniapiar, 30-III-1958 (Ortiz). Peru: Cuzco Dept., 2 females, Quincemil, 2450 ft elev., IX-X-1962 (L.E. Pena). Madre de Dios Dept., 15 females, Avispas, IX-X-1962 (L. E. Pena). 30 females, Tambopata Reserved Zone, Pto. Maldonado, XI-1979 (J. Heppner); 1 male, 1075 females, VII, VIII, X, XI-1982, (R. Wilkerson). Huanuco Dept., Tingo Maria, 1 female, Rio Huallaga, 700 m elev. IX-1946 (Weyrauch). Surinam: 7 females, Phedra, X-XI-1964 (D.C. Geijskes). Brazil: Amazonas State, 2 females, Manaus, Reserva Ducke, X-1968, (R.L. Dressler); 2 males 5 females, same locality, IX, X, XI-81 (J.A. Rafael); 1 female, same locality 6-IX-78 (Arias and Penny); 1 female, Manaus, University Campus, 17-X-78,

(J.A. Rafael); 1 female, CEPLAC AM 010, km 30, 3-X-75 (J. Arias); 2 females, Manacapura, IX-1936 (Worontzow). Para State, 1 female, km 165 W of Altamira, 6-XI-74 (J.F. Reinert); 5 females, 70 km W Monte Dourado, 27-29-XII-1980, (R. Knell). Mato Grosso State, 26 females, Rio Aripuana, Humboldt, 59°27'W, 10°19'S, 12-16-VIII-74 (D. G. Young); 2 females, Sinop, X-1976 (M. Alvarenga leg.); 2 females, Rio Madeira, Abuna, no date (Mann and Baker). Bolivia: Cochabamba Dept., 2 females, Villa Tunari, 240 m elev. 2-6-IX-1963 (R. Wilkerson).

Discussion. Under this name we include a variable and widespread taxon which we at one time considered as belonging to 5 distinct taxa, but with additional material, showing overlapping and intermediate character states, has convinced us all belongs to a single locally variable species. Future collecting may enable definition of local races or subspecies, but at present we cannot consistently separate the forms.

Specimens from south of the Amazon river, the Mato Grosso and Rio Madeira localities, have the antennae all yellow or with the terminal annulus dusky, those from north of the Amazon usually have the antennal style black, contrasting with the plate. The single Para specimen, however, has a dark style. Specimens from eastern Peru may have the antennae all yellow or the style variably darkened to all black. Material from Surinam, Colombia and Costa Rica have the antennae strongly bicolored. Specimens from the Amazon and Surinam are generally yellow with more infuscated wings than those from Venezuela, Colombia and Costa Rica, which have nearly clear wings.

The discontinuous distribution which skips Panama is probably not an artifact, as Panama has been quite extensively collected, and there are a number of other instances of such discontinuity both in Tabanidae and other groups.

The species is likely to be confused only with *S. flavescens* from which it differs in generally smaller size, narrower frons with threadlike callus, lack of a long appendix at fork and usually no cloud surrounding fork of 3rd vein, or apex of discal cell. The abdomens when undenuded bear a row of middorsal, often contiguous, pale pilose triangles forming a more or less conspicuous slender stripe.

***Stypommisa hypographa* (Kroeber)**

and

***S. hypographa neofurva* Philip**

(Figs. 31-33, 78)

***Stypommia hypographus* Kroeber** 1930, Zool. Anz. 86: 252-253. holotype female, Venezuela (Vienna) [examined]; 1934, Rev. Ent. 4(2): 274, Peru. Fairchild 1967, Stud. Ent. (1966) 9(1-4): 359, fig. 32.

***Stypommisa hypographa*:** Fairchild, 1972, Cat. Dipt. Amer. S. of U.S., Fasc.28: 81.

***Stypommisa hypographa neofurva* Philip** 1969, Acta Zool. Lilloana, Tucuman (1967) 22: 123-124, holotype female, fig. 6, Bolivia (IML).

A small black or nearly black species without conspicuous pale pilose markings, the abdomen bluish pruinose, the legs nearly wholly blackish, and wings with small clouds on fork and crossveins and moderately strong anterior and apical tinting.

Female. Translation of original description of *S. hypographa* (Kroeber). Length 12 mm, antenna ?, wing length 12.8 mm, wing breadth 4 mm. Frons about 5 times as high as wide, parallel sided, silky brownish gray, pale haired. Vertical triangle slender, long, truncated below. Ocellar spots without clear ocelli, with scattered black hairs. Frontal callus long oblong, slender, separated from eyes, shining black, moderately strongly swollen. On this rests a broad flat wedge which merges into a slender ridge which reaches nearly to the ocellar spot. Frontal triangle (subcallus) brownish gray. Face whitish gray, white haired. Palpi slender, light brown, finely white pollinose, thickly black bristled, especially towards the tip. Antennae reddish brown, first and second segments thickly black bristled, third with broad black plate without real tooth, only a very small shortly black-bristled angle. Style deep black, with short broad segments. Back of head whitish gray, short black haired. The whole body black, moderately dull, with bluish white bloom (pruinosity). Sides of thorax and scutellum brownish. Pleura and coxae whitish gray haired; legs brown, bases of fore tibia whitish yellow, silver white haired; hind tibia outwardly silver white haired; base of mid tibia yellowish, above black haired, below white haired; hind tibia outwardly silver white haired, otherwise black haired. Femora silver white haired, calypters and halter brown, stem reddish yellow. Wing somewhat brownish tinted. All veins in apical part moderately clearly brown margined, so that to the naked eye a large brown apical patch appears. Crossveins somewhat brown spotted, especially the fork with nearly circular brown spot, and the hind margin (apex) of discal cell. The ends of all longitudinal veins and apex of anal cell are dark brown becoming thus spotted. Abdomen above and below bluish pollinose without pale segmental bands or pattern. Hairs below and above at the sides of the hind margins white, otherwise black. Tergites 1, or 1 and 2, notably light whitish blue pruinose. Bolivia, Mapi, 26.I; Peru, Pichis-Weg, Puerto Yessup 23.XII.

Male. Not known.

Material examined. All ssp. *neofurva*. Bolivia: La Paz Dept., 2 females, Mapi, S. Carlos, 800 m, 9-1-03, in Dresden Mus.; 5 females, S. Inicua Riv., Alto Beni, 1100 m 15-18-1-1976 (L.E. Pena); Peru: Junin Dept., 1 female, Chanchamayo, 14-II-49 (J. Schunke). Ecuador: 1 female, no further data (L. Leon); Pastaza Prov., 1 female, 17.2 km SE Puyo, 5-XI-81 (R. Wilkerson). Colombia: 5 females, Int. Putumayo, Mocoa, 650 m, Very Wet Subtropical Forest, flight trap with CO₂, IV-15-76 (R. Wilkerson); 2 females, Pto. Asis, 240 m, Very Wet Tropical Forest, flight trap with CO₂, IV-15-76 (R. Wilkerson). Panama: Panama Prov., 2 females, Cerro Jefe, 28-IV and 8-V-1968 (R. Dressler).

Discussion. The type in Vienna from Venezuela now lacks antennae. Whether Kroeber's description was drawn wholly from the Venezuelan type or whether he included differing characteristics from his Bolivian and Peruvian specimens is unknown. His description of the antennae as black suggests that the Vienna type possessed these structures when described, although Kroeber placed a query after the antenna in the original description. Considerable material from Bolivia and Peru seen by us all have bicolored yellow or orange and black antennae. Philip (1969) differentiated his subspecies *neofurva* from Bolivia on the bicolored antennae and less evident pale pilosity on the bases of fore tibiae and sides of abdomen. Our specimens, listed above, show considerable variation in the amount of pale pilosity, and the intensity of the dark wing markings, though all but three have sharply bicolored antennae. These three have the basal plates of antennae more or less apically infuscated, so that they appear less sharply contrasting with

style. One of these is from Colombia, Putumayo, Mocoa, the other from Panama, Cerro Jefe, and all also have the wing spotting reduced in extent. Fairchild's (1967) figure of the type from Venezuela shows a more heavily spotted wing than any we have seen. Several other specimens from Putumayo have sharply bicolored antennae and larger wing spots, like those from Bolivia and Peru. One of our Ecuadorian specimens is in poor condition and lacks antennae; the other closely matches Bolivian specimens. Frontal indices of our *S. neofurva* specimens range from 4.2-5.5 ($x = 4.9$). We believe that *S. neofurva* had best be maintained as a subspecies, at least until Venezuelan specimens with antennae can be studied. Philip (1969) records the eyes as being bicolored, purple above, green below, which agrees with our specimens.

This species is very similar to *S. modica*, but has less extensively silver pilose fore tibiae, bicolored or dusky antennae, and lacks the silver pilose terminal abdominal tergites of *S. modica*. The wing spotting of *S. modica* is usually less extensive, though some *neofurva* have indistinguishable wings. The eye pattern of *S. modica* is complicated and quite different from the bicolored eyes of *ssp. neofurva*. *Stypommisa hypographa neofurva* can be separated from the sympatric and similar *S. furva* as detailed under the latter.

***Stypommisa jaculator* (Fairchild)**
(Fig. 79)

Stenotabanus jaculator Fairchild 1942, Ann. Ent. Soc. Amer., 35(3): 309, figs. 9, 9a, 9b, holotype female, Panama (MCZ); 1951, Ann. Ent. Soc. Amer., 44(3): 452-453, female, male; 1953, Proc. Ent. Soc. Washington, 55(5): 241.

Stypommisa jaculator (Fairchild). Barretto 1956, Rev. Brazil. Malar. Doencas Trop. 8(1): 82, Br. Guiana. Fairchild, 1971, Cat. Dipt. Amer.S. of U.S., fasc. 28: 81. Wilkerson 1979, Cespedesia 8(31-32): 339-340, fig. 108.

Female. A small cocoa brown or grayish brown species. Length 7-11 mm, of wing 7-10 mm. Wings tinted along fore border and apex, with small clouds at fork of 3rd vein, and more faintly at apex of discal cell. No appendix at fork. Abdomen cocoa brown, all tergites with broad silvery-haired triangles not underlain with pale pollinosity. Legs brown, the fore tibiae weakly bicolored. Antennae orange, the style sometimes darker, rarely black and contrasting. Eye in life greenish bronze with a single narrow and often faint median dark transverse stripe.

Male. The male is similar in color, and easily associated with the female. Its eyes are holoptic, the brown upper enlarged facets well differentiated and demarcated from the small bronzy green lower facets, occupying about 1/2 eye area and entirely bare. There are no long occipital hairs.

Material examined. Panama: Canal Zone, 2 females, Bohio, and 2 females Las Cascadas (both A.H. Jennings), (holotype and paratypes). 1 female, Gamboa, 20-V-1953 at light; . Panama Prov., 2 males, 7 females, La Victoria, Cerro Jefe, 2200 ft elev., 20-IV-1949, in light trap; 14 females same locality, 24-III-1946; 50 females same locality, III-IV-1949, mostly taken attacking man at platforms from 23 to 71 feet above ground level in the forest canopy; 1 female, La Victoria, Cerro Jefe, 20-IV-1958; 1 female, Cerro Azul, 24-V-1962; 1 female same locality,

20-V-1964. Cocle Prov., 2 females, El Valle, 16-VI-1946 and 10-V-1951. Darien Prov., 2 females, Upper Rio Pucro, 16-V-1958; 1 female, Rio Tuirá Yellow Fever Sta., 5-III-1958, tree tops; 1 female, Rio Paya Yellow Fever Sta., 24-IV-1958; 1 female, La Laguna, Tacarcuna, 4100 ft 18-III-1959; 3 females, Cerra Quia, Rio Mono, 2500 ft elev., 8-III-1970 human bait in tree canopy 60 ft above ground level; 2 females, Mortí River, 7-IV-1967; 1 male, Cerro Horcona, 17-III-80. 1 female, Candelaria Hydro Sta., Rio Pequeni, V-1966. Colombia: Choco Dept., 2 females, Teresita, 21 and 29-III-1967; 2 females, Curiche River, 12 and 25-IV-1967. British Guiana (Guyana): 1 female, New River, 12-V-1938, in BM(NH), the specimen reported by Barretto (1956).

Discussion. The species is highly arboreal and appears to have a short flight season, so that it may have a greater range than at present known, since arboreal collections may not have been made at the right time of year to reveal its presence. Most collections have come from areas of high rainfall and heavy forest, from near sea level to over 4000 ft. This species is very variable in size, wing lengths of available specimens ranging from 7 to 11 mm.

Stypommisa jaculator is similar to *S. prunicolor* but can be separated on: 1) color of antenna, bicolored or with at least last annuli dusky in *S. jaculator*, wholly yellow in *S. prunicolor*; 2) brown middle and hind femora of *S. jaculator* which are black in *S. prunicolor*; 3) yellow and black haired legs of *S. jaculator*, all black haired legs in *S. prunicolor*; 4) the callus of *S. jaculator* is evenly tapered above, while larger and rectangular in *S. prunicolor*; 5) frontal index of *S. jaculator* is 4.5-5.6 ($x = 5.05$), and that of *S. prunicolor* 4.2-4.9 ($x = 4.6$). The species can be separated from *S. hypographa* and *S. modica* by having middorsal abdominal triangles of white hair and less heavily marked wings.

A single specimen before us from Colombia, Antioquia Dept., Rio Anorí Valley, La Tirana, 13-IV-1971, C.H. Porter leg., CHP-71-172 DO1, does not agree with the concept of either *S. jaculator* or *S. prunicolor*. In overall coloration it is quite like a dark *S. jaculator* but has a callus similar to *S. prunicolor*. In his extensive collecting in Antioquia Porter found this species to be commonly taken in the forest canopy. Since we have only one of his specimens and no ready access to his series, we defer making a decision on the status of this form.

***Stypommisa kroeberi* n. sp.**
(Figs. 34-36, 80)

?*Stypommia venosa*: Kroeber, in part, 1930 Zool. Anz. 86(-10): 250, fig. 1. Not Bigot 1892.

A pale yellowish brown species with large clouds around fork of 3rd vein and end of discal cell, small clouds or none at ends of basal cells and apical infuscation beyond stigma.

Female Holotype. Length 11.5 mm, of wing 10.5 mm. Head structures as figured. Eyes bare, no pattern (relaxed), probably greenish in life. Frons and subcallus grayish brown pollinose, concolorous. Frontoclypeus and genae paler, pinkish gray. Frontal callus reddish brown. Antennae orange yellow, only the tip of the terminal annulus blackish. Palpi yellowish brown pollinose, wholly black haired except for sparse brownish hairs at base of terminal segment beneath. Beard sparse, white, proboscis brown, the labella membranous, pollinose.

Integument of thorax brown, thinly gray pollinose dorsally, more thickly white pollinose laterally and ventrally. Scutellum paler, apically yellowish. Dorsally the vestiture consists of sparse recumbent mixed black and brassy short hairs, longer and black on notopleural lobes, long and white or pale gray on pleura and coxae. Legs largely orange yellow, the coxae, femora and at least ventral aspects of mid and hind tibiae yellow haired, the apical half of fore tibiae, apices and dorsal surfaces of mid and hind tibiae, and all tarsi more or less dark pilose. Fore tibial integument apically dusky, the vestiture white basally, black apically, appearing bicolored. Wings as figured, the basicosta pointed, black setose, the setae nearly as dense as on adjoining costa. Venation normal, a short appendix on fork of 3rd vein, shorter than the long subtending vein segment. Veins brown, costal cell yellow, clouds brownish, apical infuscation paler brown, rest of wing nearly hyaline. Halteres yellowish orange, knob and stem concolorous.

Abdominal integument orange yellow, dorsally subshiny, beset with short black hairs, the posterior margins of all terga narrowly and sparsely pale yellowish pilose, more evident in middle and at sides. Beneath the hairs are longer and entirely whitish except for longer outstanding black hairs on last visible sternite.

Male. Not known.

Type data. Holotype female, Peru: Huanuco Dept., Tingo Maria, 670 m, IX-47 (Weyrauch leg.), deposited in MCZ. Paratypes, 2 females, same data as holotype, 1 det. *venosus* Bigot by Fairchild 1956. 1 female, Tingo Maria, Rio Hualaga, 700 m Peru (W. Weyrauch), labelled as same as homotype of *venosus* in coll. C.B. Philip, except that basal plate longer, style shorter, both yellow, dusky throughout in homotype. Right wing mounted on slide St. 6. Cuzco Dept., 1 female, Quincemil, 740 m elev., VIII-1962 (L.E. Pena); 2 females, Quincemil, 2450 ft., VIII-1962 (L.E. Pena). Madre de Dios Dept., Avispas, 1000-1300 ft., 10-30-IX-1962 (L.E. Pena). Bolivia: Sara Prov. 1 female, (Steinbach). Cochabamba Dept., 1 female, Cristal Mayu. 23-XI-1949 (Luis E. Pena); 21 females, Villa Tunari, 2400 m elev. (R. Wilkerson). Paratypes in CNC, Cornell, FSCA and collections of authors.

Discussion. There is not much variation in the paratypes, except that frontal callosities vary from yellow to nearly black, and the intensity of wing markings may be greater or less than shown. One specimen nearly lacks a dark cloud at end of discal cell. Some have the abdomen darker, with evident middorsal pale haired triangles. One has frontal callus evenly tapered, clavate. Frontal indices of 9 specimens: 5.1-5.9 ($x = 5.4$), divergence index 1.2-1.6 ($x = 1.4$).

This appears to be, at least in part, the species treated as *Tabanus venosus* Bigot by Kroeber (1930). It differs from *T. furva* Hine in lacking strong spots at ends of basal cells, in narrower frons, in pale brownish rather than black integument, and in nearly wholly yellow antennae. *S. spilota* n. sp. differs in more extensive dark spotting of the wings, black integument of thorax and scutellum, and bicolored antennae. *S. changena* n. sp. also has bicolored antennae and much darker thoracic integument, as well as smaller and less defined wing spots. From *S. pequeniensis* and *S. captiroptera* this species differs in much more heavily spotted wings, although some populations of *S. pequeniensis* and all *S. captiroptera* have similarly colored antennae. It is quite possible that more extensive material may show this, *S. venosa*, *S. spilota* and possibly *S. changena* to be but geographic forms of a single species.

Stypommisa lerida (Fairchild)
(Fig. 81)

Stenotabanus lerida Fairchild 1942, Ann. Ent. Soc. Amer. 35(3): 307, fig. 14, 14a, 14b., Panama Chiriqui (MCZ) [examined].

Stypommisa lerida: Fairchild 1971. Cat. Dipt. Amer. S. of U.S. Fasc. 28: 81.

A small stout brown species with prominently spotted wings, banded abdomen with an integumental middorsal black spot on tergite 2, bicolored antennae and fore tibiae.

Female. Length 10-11.5 mm, of wing 10.5-11 mm. Eyes bare, apparently green with a single purple band in life. Frons a little over five times as high as basal width, slightly narrowed below, yellowish brown pollinose. Frontal callus dark brown, higher than wide, narrower than frons, and prolonged in a slender line $2/3$ the distance to the vertex. Tubercle at vertex with traces of three ocelli. Subcallus yellowish pollinose, with sparse long whitish hairs. Frontoclypeus and genae gray, sparsely grayish haired. First two antennal segments yellowish, black and pale haired. Basal part of 3rd segment orange, longer than wide, the dorsal tooth small and near base. Annulate portion black, shorter than basal portion. Palpi pale brownish, slender, mostly black haired.

Mesonotum and scutellum brown, the latter with reddish apex, indistinctly grayish striped, and with sparse golden hairs. Pleura, sternum and coxae gray pollinose, rather abundantly gray haired. Legs light brown, the tarsi and apices of fore tibiae darker. Femora pale haired, tibiae and tarsi mostly dark haired. Wings with basicosta bare. Wings faintly smoky, darker along costa and hind margin, and with prominent clouds on all crossveins. Upper branch of 3rd vein long appendiculate, costal cell yellow. Abdomen orange brown, darker towards apex, the hind margins of all tergites paler and yellow haired, rest of tergites dark haired. The second tergite, and rarely the third, bears a median black integumental spot. Venter pale reddish brown, mostly pale haired.

Material examined. Holotype female and 7 female paratypes, Panama: Chiriqui Prov., Boquete, III-IV-1941 (Mrs. T.B. Monniche); 9 female paratypes, Chiriqui Prov., Cerro Punta, II-III-1940, 6,000 ft (T.T. Howard); Chiriqui Prov., 1 female, Finca Lerida, Boquete, III-1956 (G.B. Fairchild); 4 females, Palo Santo, II-III-1951 (Galindo leg.).

This species is structurally like *S. furva*, but differs in brown abdomen and legs. From *S. changena* n. sp. it differs in having a black integumental spot on 2nd abdominal tergite, a generally shorter appendix at fork, in being confined to the Pacific slope of the Chiriqui mountains, and in being on the wing during the dry season from Feb. to April.

Stypommisa maruccii (Fairchild)
(Fig. 82)

Stenotabanus maruccii Fairchild 1947, Ann. Ent. Soc. Amer. 39(4): 568, fig. 8a, b, (1946), holotype female, Panama (MCZ); 1958, op. cit. 51(6): 529, synonymy. Lee, Fairchild and Barreto, 1969, Caldasia, Bogota, 10(49): 450-451, Colombia.

Stenotabanus frondicolus Fairchild 1951, Ann. Ent. Soc. Amer. 44(3): 453-454, figs 5b., Panama; 1953, Proc. Ent. Soc. Washington 55(5): 241.

Stypommisa maruccii (Fairchild) 1971, Cat. Dipt. Amer. S. of U.S., fasc. 28: 82. Wilkerson 1979, Cespedia, 8(31-32): 339-340, figs. 109.

A small blackish species with prominently striped thorax, usually bicolored antennae, wholly black legs, bluish pruinose abdomen with silvery pilose median triangles and faintly tinted wings with small clouds at fork and end of discal cell.

Female. We give below the original description of *Stenotabanus frondicolus*, as it is more complete than that of *S. maruccii*. The figure accompanying this description shows the frons slightly narrower than usual. The figure of *S. maruccii* is better.

Length, 9.5-11 mm, wing, 10-11 mm. Frons dark golden yellow pollinose. Frontal callus black, nearly as wide as frons, gradually narrowed above into a slender ridge nearly reaching vertex. Vertical tubercle prominent, with 3 well marked ocelli, the vertex with unusually dense stout black setae. Eyes bare, in life bright brick red, with a single narrow green transverse band, fading on death to dull bronzy. Subcallus, frontoclypeus and genae yellow pollinose, the last with sparse whitish beard. Antennae moderately slender, brownish, black haired. Proboscis short, much less than head height, but little longer than palpi, the labella fleshy.

Mesonotum blackish with four somewhat gray pollinose stripes, whose intensity varies with the light incidence. Hairs black on dark parts, brassy on the pale stripes. Scutellum pale pollinose, with dark hairs in the middle and brassy hairs around the margin. Pleura steel gray pollinose, mostly pale haired, except a tuft of black hairs in the middle. Legs wholly black and black haired. Wings with subepaulet pointed and with fairly abundant macrotrichiae. Wings grayish hyaline with small but distinct clouds on fork of third vein and end of discal cell. Abdomen above black in ground color, rather thickly overlaid with somewhat iridescent bluish pruinosity. This is very pronounced on the first tergite, less so on succeeding segments, where it is more or less confined to the posterior two-thirds of the tergites. The tergites are mainly black haired, except the first, which is wholly silvery haired at the sides. There is also a series of median silvery haired triangles on the second to sixth tergites and lateral patches of silvery hairs on the sides of the same tergites. Beneath the abdomen is black, mostly bluish pruinose and with all sternites with complete transverse bands of silver hairs. The insect in life bears a remarkable resemblance to a sarcophagid fly.

Holotype female, Progreso, Chiriqui Prov., Panama 20 July 1950; 9 female paratypes, same locality, 16 June (1), 28 July (1), 3 August (3), 17 August (1), 31 August (1), 9 Nov. (1), 16 Nov. (1); 7 paratypes, Sta. Fe. Veraguas Prov., Panama, 18-23 May (1), 29 May (1), 31 May (3), July (1), 10 Aug. (1).

With a few exceptions, all the Panama specimens were taken at platforms built in the tree tops in heavy forest, from 36 to 83 feet above ground level. Colombian examples were mostly taken in flight traps.

In addition to the above description, measurement of the fronts of 19 specimens from Nicaragua (1), Panama (12), and Colombia (6) show the frontal index varying from 3.8 to 5.5 ($x = 4.95$).

Male. The male, based on a specimen from Rio Palenque, Ecuador, is easily associated with the female on color characters. The eyes are bare, the upper facets much enlarged and well demarcated from the small, occupying fully 2/3

eye area. There is a small tubercle between the eyes at vertex and the antennae are bicolored.

Material examined. Only a sample, including 9 paratypes of *frondicalus*, of the material discussed in the cited references is now before us. Additional records are Colombia: Choco Dept., Curiche River, 18-IX, 26-X-1967; Valle Dept., 25 and 41 km E of Buenaventura, 12-VIII-1973 and 19-III-1976 (Wilkerson and Young); Anchicaya Dam, 10-VIII-1973 (Wilkerson and Young); Nicaragua: Villa Somoza, 7-VII-1953. See Wilkerson (1979) for additional Colombian records. The species appears to range from Nicaragua to Ecuador west of the Andes.

Discussion. The species is predominantly arboreal (Fairchild 1953) and a good mimic of a Sarcophagid fly (flesh fly), even to the red eyes. Attempts to revive the eye color give only a green eye without the median band seen in fresh specimens. The species appears to range from Nicaragua south to western Ecuador and flies throughout the year. We have records from every month save April. It can be distinguished from similar muscoid mimics such as *S. hypographa neofurva* and *S. modica* by the strongly striped thorax, unicolorous dark legs, median silvery pilose abdominal triangles and weakly spotted wings. Several other tabanids, belonging to other genera also seem to be mimics of similar sarcophagid models. *Philipotabanus (Mimotabanus) plenus* Hine is larger with white beard and with a dark wing patch below the stigma, but is very like *S. maruccii* in other respects. *Eutabanus pictus* Kroeber has the same striped mesonotum, white median abdominal triangles and unicolorous black legs, but head structures are quite different. The wings are hyaline with a narrow transverse fuscus stripe below stigma and a slender apical fuscus stripe along the margin from stigma to apex. *Myiotabanus sarcophagoides* Lutz has the same general appearance, but is much smaller, less than 10 mm, and the mid abdominal pale triangles are contiguous, forming a stripe. The head structures are again distinctive, with partly bare subcallus, proboscis equalling head height and short inflated palpi. *M. muscoideus* Hine is also very similar, but specimens are not at hand for detailed comparison.

Stypommisa modica (Hine)

(Fig. 83)

Tabanus modicus Hine 1920, Ohio H. Sci. 20(6): 188, British Guiana, holotype female (Columbus) [examined].

Stypommisa modica: Fairchild 1971, Cat. Dipt. Amer. S. of U.S., fasc. 28: 82, synonymy.

Stypommia hypographa var. *ruficornis* Kroeber 1930 Zool. Anz. 86: 253, Iquitos, Peru, holotype female (Halle) [examined]. Fairchild 1967, Studia Ent. 9(1-4): 350, fig. 33 (1966), gives notes on types, synonymized with *modica* Hine. Philip, 1969 Acta Zool. Lilloana, Tucuman, Argentina, 22: 124 (1967), confirms syn. with *modica* Hine.

A small black species with bluish pruinose thorax and anterior abdomen, the wings with small clouds on crossveins and fork and apically brown tinted. Fore tibiae basally with some white, antennae wholly orange yellow.

Female. Hine's description is as follows: "Total length of the body 11 mm. Whole body black with a whitish bloom especially on the thorax and base of the abdomen. Palpi rather slender, pale, with sparse dark colored pile, somewhat

shorter than proboscis. Antenna yellow, 1st segment slightly produced forward above and furnished with black pile, 3rd segment angulate above near the base and with a tip of black pile but not drawn out into a process. Front moderately narrow, frontal callosity below practically as wide as the front, shining black, widest portion distinctly longer than wide, then gradually narrowed to a line which connects with a shining area at the vertex. Thorax without apparent stripes, wing fuliginous, darker along costal border and on the margins of the crossveins at the apices of the basal and discal cells and at the furcation of the 3rd vein. First posterior cell wide open, anterior branch of 3rd vein without an appendix. Legs black, front tibiae narrowly white at the base. Holotype female from British Guiana in my collection."

The eyes in life are red or reddish with a broad median green band, tapered outwardly, through which a narrow bright blue stripe runs, the green being considerably wider below the stripe than above it. There is only minor variation in color.

Male. The male, hitherto undescribed, is similar to the female in wing and body colors, but almost lacks white pilosity at base of fore tibiae. The eyes are bare, the upper facets greatly enlarged and well demarcated from the lower small facets. In both dried specimens available the large facets are bright reddish brown with a double band of paler facets enclosing a darker central area. The lower pale band is almost white, lies close to the lower border of the large faceted area, but is separated from the blackish small facets by a narrow strip of reddish facets. There is a small pedunculate black and sparsely pilose tubercle between the eyes at vertex. The palpi are dull yellowish, densely long dark pilose. Both specimens were taken in a flight trap set in the forest canopy at Tambopata Reserved Zone, Madre de Dios, Peru.

Material examined. In addition to Hine's and Kroeber's types studied by Fairchild, we have seen the following specimens. Peru: Pasco Dept., 1 female, Miriatiriani, Camino de Pichis, 9-VII-1920, Cornell Univ. coll., comp. with types of *hypographa* var. *ruficornis* Kroeber. Madre de Dios Dept., 2 males, 20 females, Tambopata Reserved Zone, 30 km SW Puerto Maldonado, X-XI-1982 (R. Wilkerson). Ecuador: Napo Prov., 1 female, Limoncocha, 18-25-V-76 (D.G. Young). Brazil: Para State, 2 females, Belem, APEG forest, 13-VII and 2-XII-1970, in forest canopy (Aitken and Toda). Four females, same locality, 29-VII to 6-VIII-1974, flight trap, and VII-1981, arboreal flight trap (G.B. Fairchild leg.). There is also 1 female, not now before us, from Chapare, Bolivia in coll. Sixto Coscaron. The frontal indices of 6 specimens ranged from 4.6 to 5.25.

Discussion. Kroeber's description of his "varietat *ruficornis*" is brief, translated as follows: Type Halle, from Amazonas. Equal in all respects to the stem-form (typical *hypographa*). The antennal style is light reddish yellow, only the terminal annulus is somewhat browned. Wing with uniformly brownish apical part. The vein endings not darker bordered, but fork and hind border (distal end) of discal cell brown spotted. Abdomen from 3rd tergite on with little white hairs in the middle of the hind margins, on tergites 6 and 7 the whole margins are white haired. Iquitos, Fonteboa, Rio Negro.

From the limited data available, it appears that the species flies throughout the year and may be primarily arboreal. *Stypommisa modica* can be separated from the similar *S. hypographa* and ssp. *neofurva* by nearly wholly yellow antennae, slightly narrower frons and smaller wing spots. It differs from *S. prunicolor* and *S. jaculator* in lacking any trace of dorsal pale triangles on abdomen. The

distribution indicated by the material we have seen is no doubt less than the actual range, as little arboreal collecting has been done except in a few localities.

***Stypommisa paraguayensis* (Kroeber)**
(Figs. 49-51, 84)

Stypommisa paraguayensis Kroeber 1930, Zool. Anz. 86(9-10): 250-251, holotype female, Paraguay, Hohenau (Dresden) [examined].
Fairchild 1967, Stud. Ent. 9(104): 360, fig. 25.

Stypommisa paraguayensis: Fairchild 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 82.

A small dark brown species resembling *S. scythropa* but with contrasting whitish pattern on mesonotum, more heavily spotted wings, different frons, and bare-eyed males. Our material has frontal indices of 3.8-4.8 and divergence indices of 1.2-1.4.

Female. Translation of original description: "Type: Dresden, von Paraguay, Hohenau, 25. X. Length 10.6 mm; antenna 1.4 mm; wing length 10.2 mm; wing breadth 3.7 mm. Frons about 5 times as high as broad, parallel sided, cinnamon brown, yellow haired, at vertex brown, black haired. Ocellar spot small, ocelli indistinct. Frontal callus triangular with upper prolongation double its length, pale brown. Subcallus and face reddish cinnamon brown next to the eyes, otherwise yellow brown and so haired. Antenna bright reddish yellow; 1st and 2nd segments yellow brown, with fine short black hairs. Style deep black. Palpi long as in *Esenbeckia*, outwardly short and fine black and yellow haired, slightly bent. First segment long yellow haired. Back of head gray, at eye border yellow, yellow haired. Thorax dark reddish brown with the beginnings of 2 pale longitudinal stripes and a finer dark midline. Hairs yellowish. Scutellum brown, blackish basally, the hind border white tomentose. Pleura paler yellow brown, in part gray, yellow haired. Halteres and squamae yellowish brown, the knob dark brown. First and 3rd femora blackish brown, fore predominantly yellow haired, knees yellowish. Tibiae yellowish, yellowish brown haired. Tibia black at apex. Tarsi brown, the fore pair black. Wings nearly hyaline, lightly brown tinged. Veins finely brown margined, crossveins and fork intensely brown spotted. Appendix (at fork of 3rd vein) shorter than basal segment of upper branch of fork. First to 3rd tergites yellow-brown, 4 to 7 black brown, all hind margins clearly yellowish haired with middorsal triangles. Otherwise the hairs are black. Sternites 1 to 3 pale yellow brown, the rest blackish, yellowish tomentose and haired."

Male. Length 11 mm, of wing 10 mm. Eyes bare, holoptic, the upper enlarged facets sharply demarcated and differentiated from the lower small facets, occupying about 2/3 of eye area, the small facets margining the larger outwardly but not reaching vertex. Large facets in the dried specimen reddish brown, with a broad yellowish band on lower margin. Small facets black. A small scale-like tubercle between eyes at vertex. Frontal triangle golden brown pollinose. Antennae yellow orange, style contrasting black, more slender than female. Palpi porrect, long oval, slightly falcate at tip, pale yellow pollinose and beset with long pale hairs. Thorax, wings and abdomen as in female, the abdomen paler brown, more pointed, and with longer denser hairs, especially laterally. Legs reddish yellow, the femora only slightly darker.

Material examined. Brasil: Minas Gerais State, plesiotype male, Sapucaimirim, Cidade Azul, 1400 m, 6-IX-1953, (Travassos F., Piera and Madeiros), right wing slide mounted. Sao Paulo State, 5 females, Cantareira, VIII-1958 (J. Lane); 1 female, Horto Florestal, Chapada, VII-46 (F. Lane); 1 female, Cotia, VII-61 (Rabello); 1 female, Est. Biol. Boraceia, Salesopolis, 850 m, 24-VII-61, isca humana, 17-19 horas, (Rabello). 1 female, Serra da Bocaina, Faz. do Bonito, 25-30-IX-1913, (A. Lutz).

Discussion. In spite of not having both sexes from the same locality, we associate our single male on the basis of agreement on wing and body color, especially the prominently striped thorax. The females can usually be separated from dark specimens of the *punctipennis* form of *S. scythropa* by the more heavily spotted wings, yellow triangular frontal callus, and frons with median patch of dark pollinosity as well as such an area surrounding the ocellar tubercle. In addition, *S. scythropa* may have a median denuded groove in the subcallus appearing to be a slender prolongation of the usually round basal callus. We associate our specimens with *S. paraguayensis* on the basis of Kroeber's description and Fairchild's figure (1967) of the holotype. We have seen no Paraguayan specimens like these.

***Stypommisa pequeniensis* (Fairchild)**

(Figs. 46-48, 85)

Stenotabanus* (*Stenotabanus*) *pequeniensis Fairchild 1942, Ann. Ent. Soc.

Amer. 35(3): 308-309, fig. 13, a, b., holotype female, Panama (MCZ); 1961, Rev. Biol. Trop. 9(1): 29, Costa Rica.

Stenotabanus pequeniensis Philip (lapsus) 1960, Proc. Calif. Acad. Sci., Ser. 4, 31(3): 77, Peru.

Stypommisa pequeniensis Fairchild 1971, Cat. Dipt. Amer. S. of U.S.

Fasc. 28: 82. Wilkerson, 1979, Cespedesia 8(31-32): 340-42, fig. 110, 111. Hogue and Fairchild 1974, Rev. Biol. Trop. 22(1): 22, Costa Rica.

Female. A small brown species, wing length 8.5 mm to 11.0 mm., the dorsum of abdomen entirely black pilose, the venter, pleura and beard white to gray pollinose and pilose. Legs brown, the tarsi, especially fore pair, nearly black. Wings apically fumose, the dark area clearly demarcated from hyaline discal area. Costal cell brown. Fork of 3rd vein appendiculate and with a distinct small dark cloud; crossveins at end of discal cell also usually with faint to strong clouds. Antennae variable, yellow to brown or bicolored.

Male. The male is like the female in color and vestiture, though the wings are usually paler and clouds at end of discal cell fainter. Upper eye facets bare, greatly enlarged and well demarcated from the lower facets, occupying fully 2/3 eye area, making the head distinctly wider than thorax. Antennae more slender than in female. A small tubercle is sunk between the eyes at vertex and there is a marked post occipital fringe of forward pointing hairs.

Material examined. In the following enumeration of specimens we have not included material identified or reported by Fairchild in previous years unless the specimens are currently before us, since the complexity of the group was not then appreciated, and some determinations may have been erroneous. We believe

that reports of the species from Costa Rica in Hogue and Fairchild (l.c.) are probably correct, though no Costa Rican specimens are now before us.

Panama: Bocas del Toro Prov., 1 female, Almirante, Yellow Fever Camp, Shannon trap, 20-V-1952 (Galindo leg.); 2 females, same locality, VII-1951; 2 females, Almirante, 16,17-V-51 (Trapido); 1 female, Rio Terribe, Timishik, V-1962. Panama Prov., 1 female paratype, Rio Pequeni, 21-VIII-1940 (G.B. Fairchild); 1 female, Candelaria Hydrographic Station, Rio Pequeni, V-1966 (Galindo); 1 female, Rio Mamoni, Salto de Madrono, 20-V-1957 (Johnson); 1 female, Cerro Campana, on hostel window, 6-IX-56, (G.B. Fairchild); 1 female, Cerro Azul, La Eneida, 23-V-61 (Galindo leg.) Colon Prov., 1 female, Mandinga, V-1964 (Galindo leg.). San Blas Prov., 1 female, Sasardi, Interoceanic Canal, Study No. 7078, 1-X-1967 (D.G. Young). Darien Prov., 1 female, Morti River, 21-IX-67, I.C.S. No. 1997; 2 males, 3 females, Rio Tacarcuna Yellow Fever Camp, 1900 ft elev. 21-VI, 11,12-VII-1963 (G.B. Fairchild). **Colombia:** Antioquia Dept., 1 female, Rio Anori Valley, Providencia, 30-V-70 (C.H. Porter); 1 female, SW Zaragoza, IX-1970 (D.G. Young); 1 male, La Tirana, Providencia, 25 km W of Zaragoza, 30-V-71, in house at night (D.G. Young); 2 males, Rio Anori Valley, La Tirana, 17-IX and 20-V-1971, at light (C.H. Porter). Valle Dept., 3 females, Anchicaya Dam, 500 m elev. 10-VII and 18-VIII-75 (R. Wilkerson); 3 females, Anchicaya Dam, 500 m elev. 10-VIII-73 (Wilkerson and Young); 1 male, 50 females, Lower Anchicaya, Very Wet Forest, 400 m elev., 28-I, 5-II, 2-IV, 10, 11, 14-VI, 16-VIII-1975 (R. Wilkerson); 2 females, 25 km E of Buenaventura, 50 m elev., 12-VIII-1973 (Wilkerson and Young); 6 females, 41 km E of Buenaventura, 140 m elev., 5-XII-75 and 19-III-76 (R. Wilkerson). Cauca Dept., 1 female, Guapi, 10 m elev., 10-V-76 (R. Wilkerson); 69 females from various localities in Valle and Cauca, III, VII, VII, XI-1977 (M.A. Tidwell). Intendencia Putumayo, 4 females, Mocoa, 650 m elev., Very Wet Subtropical Forest, flight trap with CO₂, 15-IV-76 (R. Wilkerson); 2 females, Puerto Asis, 1240 m elev., 15-IV-76 (R. Wilkerson). **Ecuador:** Pastaza Prov., 6 females, vic. Puyo, 5-XI-81 (R. Wilkerson). Guayas Prov., 1 female, Balao Chico, 23-29-IV-1963 (L. Pena); 1 female, Bucay, 13-11-73, 13-VI-1977 (D.L. Vincent); 1 female, Rio Cononaco, Anglo Air Strip, 70 mi SE Limoncocha, 29-V-76 (J. Cohen); 1 female, Puerto Montufar, 28-IV-76 (J. Cohen). **Peru:** Cuzco Dept., 1 female, Quincemil, 2450 ft elev. 16-31-X-1962 (L.E. Pena). Huanuco Dept., 1 female, Tingo Maria, 670 m elev., I-1942 (Weyrauch). Madre de Dios Dept., 7 females, Tambopata Reserved Zone, 30 km SW Puerto Maldonado, 290 m elev., X-XI-1982 (R. Wilkerson). Loreto Dept., 1 female, Iquitos, III-IV-1930 (R.C. Shannon). **Bolivia:** Beni Dept., 7 females, S. Inicua River, 1100 m elev., 15-18-1-1976 (L.E. Pena).

Discussion. *St. pequeniensis* forms one of a group of four similar species, *S. flavescens* Kroeber., *S. captiroptera* Kroeber and *S. anoriensis* n. sp. being the other three. From all of these it is distinguished by lack of yellow pilosity, either on the abdomen or elsewhere, all pale areas being whitish or gray pollinose and pilose. The apical dusky area on the wing is usually all dark and distinctly demarcated from the more hyaline discal area. Our series of *pequeniensis*, though limited, shows that most specimens from east of the Andes have largely yellow antennae and most of those from west of the main chain have bicolored antennae, with the whole style black. Specimens from Panama may have antennae all yellow, all brownish or bicolored.

This species is apparently not arboreal nor crepuscular. It has been taken attacking man and in flight traps, while males have been taken at light. Most collections have been made in heavy forest in areas of high rainfall, mostly at low to moderate elevations.

***Stypommisa prunicolor* (Lutz)**
(Figs. 52-54, 86)

Tabanus prunicolor Lutz 1912, Tabanideos, in Comm. Linhas Telegr. Estrat. Mato Grosso ao Amazonas, Anexo No. 5, Historia Natural, 6, pl. 1, fig. 5, lectotype female Brazil, Mato Grosso (Rio). Fairchild: 1961, Mem. Inst. Oswaldo Cruz, 59(2): 232, pl. 2, fig. 1 designates lectotype; 1971, Cat. Dipt. Amer. S. of U.S., fasc. 28: 100.

A small grayish black species with wholly yellow antennae, large, rectangular, frontal callus filling width of frons, basally blackish femora, and wings with a single small brown spot at fork of 3rd vein and fore border apically brownish.

Male. Not known.

Material examined. The types were studied by Fairchild in the Instituto Oswaldo Cruz in 1959 and figured in 1961 (l.c.). Aside from these specimens, we have seen the following material. Brazil: Maranhao State, 1 female, Marmelo, at human bait, 8-XI-62 (Werner). Mato Grosso State, 6 females, Sinop, X-1976 (M. Alvarenga leg.); 8 females, Humboldt, Rio Aripuana, 59°27'W, 10°10'S, 12-16-VIII-74 (D.G. Young). 1 female, Rio Madeira, Abuna (Mann and Baker) Peru: Madre de Dios Dept., 6 females, Tambopata Reserved Zone, 30 km SW Puerto Maldonado, 290 m elev., 15-IX-82, 15-30-VIII-82, 20-31-X-82 (R. Wilkerson).

Discussion. The species is very similar to *S. jaculator*, but is darker, with all femora at least blackish at base, broader frons (index 4.2-4.9, $x = 4.6$) with the tapered callus set in a broad oblong bare area as wide as frons and about 1.3 to 1.2 height of frons. Antennae are wholly yellow, usually bicolored in *S. jaculator*. Otherwise color and wing pattern are as in *S. jaculator*.

There is also considerable resemblance to *S. modica*, but the latter has wholly black legs except bicolored fore tibiae, a strong cloud on crossveins at apex of discal cell, frontal callus separated from sides of frons, and the abdomen without large pale pilose triangles or broad sutural bands, being generally entirely black pilose except at extreme sides and sometimes with tiny silvery hair tufts on last few segments dorsally.

***Stypommisa rubrithorax* (Macquart)**
(Figs. 55-58)

Tabanus rubrithorax Macquart 1838, Dipt. Exot. 1(1): 142, Minas Gerais, Brazil, holotype female (Paris) [examined]. Kroeber, 1934, Rev. Ent. 4(3): 314.

Stenotabanus rubrithorax: Fairchild 1956, Smiths, Miscell. Coll. 131(3): 27.

Therioplectes punctulipennis Enderlein 1925, Mitt. Zool. Mus. Berlin 11(2): 262, Mato Grosso, Brazil, Lectotype female (Berlin) [examined].

Enderleiniella punctulipennis: Kroeber 1932, Stettin Ent. Zeitg. 93: 153.

Dudaella punctulipennis: Strand 1932, Fol. Zool. Hydrobiol., Riga 4: 142.

Stypommisa rubrithorax: Fairchild 1966, J. Med. Ent. 3(1): 16, fig. 28 (as *punctulipennis* Enderlein); 1971, Cat. Dipt. Amer. S. of U.S., Fasc. 28: 82.

Stypommisa n. sp. aff. **scythropha** Schiner: Strickman 1982, J. Med. Ent. 19(4): 402, Paraguay.

A small slender pale brownish species usually with bicolored antennae, narrow frons, unicolorous pale legs, very faintly spotted or unspotted wings, and yellowish brown abdomen with a black integumental mark on 2nd tergite and pale median dorsal pollinose triangles on tergites 2 to 6.

Female. Length 9-10 mm, wing length 8-9 mm. Eyes bare, pattern not recorded. Head structures as figured. Frontal index, 4.1-4.4 ($x = 4.3$, $n = 10$); divergence index, 1.0-1.2 ($x = 1.1$). Mesonotum grayish brown, obscurely striped. Legs yellowish, pale haired, except apex of fore tibiae and all tarsi darker haired. Wings including costal cell yellowish hyaline, with barely perceptible clouds on fork and apex of discal cell, basicosta rarely bare, usually with 1-12 setae. Appendix on fork of 3rd vein shorter than base of vein, rarely absent. First posterior cell widely open. Abdomen light brown in ground color, with a usually prominent dark integumental triangle or streak on 2nd tergite and 3rd and succeeding tergites progressively darker. Tergites 2 to 6 with prominent pollinose middorsal triangles and narrow pale-pollinose hind margins, slightly widened at sides.

Male. Length 9.5 mm, of wing 8.5 mm. Eyes with facets in center slightly enlarged, but not well differentiated or demarcated from small facets. Eye dorsally short pilose, the pilosity denser and longer on upper and central part of eye, nearly absent on lower 1/4. Palpi porrect, long and slender. Coloration and wings as in female and easily associated with it. Matches specimen from Brazil, Coqueiros Cajuru, Sao Paulo, 27-IX-1954 (Barretto and Duret).

Material examined. In addition to the types of both names: Brazil: Sao Paulo State, 1 male, 2 females, Coqueiros, Cajuru, 27-IX- to 1-X-1954 (Barretto); Goyaz State, 2 females, Anapolis, 23-IX-1936 (homotype of rubrithorax Macq.) and 17-X-1936 (G.B. Fairchild); 4 females, 1907 (Baer). Mato Grosso State, 23 females, Rio Aripuana, Humboldt, VIII-1974 (D.G. Young); 4 females, Aracaju, XII-1937 and IX-1937, (1 female homotype of punctulipennis End.) (Fairchild and Shannon); 1 female, Chapada (Lane). Paraguay: Amambay Dept., 3 females, Parque Nacional Cerro Cora, 16-XIII-1980 (D. Strickman). Argentina: Jujuy Prov., 1 female, Ing. Ledesma, near General San Martin, 10-X-1968 (L. Pena). Bolivia: Santa Cruz Dept., 2 females, 10 km E Warnes, 19-22-VIII-83 (R. Wilkerson). 1 female without data except "2945". One of us has also seen considerable additional material from Goyaz and southern Mato Grosso, not now before us.

Discussion. This little species can generally be separated from others in the group by having the wing spots very faint or rarely absent, the appendix at fork of 3rd vein short or nearly absent, the legs pale, except occasionally the femora dusky, the second abdominal tergite yellow to brown, usually with a small median dark integumental streak, and all tergites with conspicuous median pale pollinose triangles. The specimens from Sao Paulo, Goyaz and Mato Grosso mentioned above all have entirely yellowish legs and largely yellow to light brown abdomens; the three from Paraguay are much darker, with femora dark brown to nearly black. We detect no significant differences in structure or frontal indices, however, and believe these are but local variants. The specimen from Argentina is not now before us, but we believe it was pale like those from Mato Grosso.

***Stypommisa scythropa* (Schiner)**

(Figs. 62-64, 87)

Tabanus scythropus Schiner, 1868, Reise Novara, Zool. 2(1,B) Diptera pp. 92-93, holotype female, Rio de Janeiro, Brazil (Vienna) [examined]. Fairchild, 1967, Pacific Ins. 9(2): 251.

Sciladynus scythropus: Kroeber 1930, Zool. Anz. 86(9-10): 256.

Dudaella scythropus: Kroeber 1934, Rev. Ent. 4(2): 276.

Hybomitra beieri Philip 1958, J. Kansas Ent. Soc. 31(2): 180, holotype female, Cantareira, S. Paulo, Brazil (Vienna) [examined]. Fairchild 1967, Pacific Ins. 9(2): 244, synonymized with *scythropa*.

Stypommisa scythropa: Fairchild 1971, Cat. Dipt. Amer. S. of U.S., Fasc. 28: 82.

Stypommisa punctipennis Enderlein, 1925, Mitt. Zool. Mus. Berlin 11(2): 369, lectotype female, Rio Grande do Sul, Brazil (Berlin). Kroeber 1929, Zool. Anz. 83: 115, fig. 4 (wing). Fairchild 1966, J. Med. Ent. 3(1): 16, fig. 28, designates lectotype; 1971, Cat. Dipt. Amer. S. of U.S., Fasc. 28: 82 (NEW SYNONYM).

Therioptectes punctulipennis Enderlein 1925, Mitt. Zool. Mus. Berlin 11(2): 262, male only. Fairchild 1966, op. cit. 3(1): 16.

Sziladya punctulipennis: Kroeber 1930, Zool. Anz. 86(9-10): 555.

A small light to dark brown species with heavily spotted wings and a prominent middorsal row of pale pollinose triangles on abdomen. Antennae bicolored and at least the fore tibiae bicolored.

Female. Length 9-12.5 mm, of wing 8.5-10 mm. Eyes bare, no pattern recorded. Frontal index 3.7 to 4.5 Head structures as figured. Antennal plate yellow to dark orange, sometimes apically blackish or with a black streak, the style black. Palpi yellow, black pilose. Mesonotum blackish brown, clearly to obscurely striped. Pleura grayish pollinose and pilose. Legs with femora and coxae black to dark brown, contrasting with yellow tibiae, the fore pair bicolored. Wing as figured, the appendix shorter than stem, often absent, spots on crossveins and fork prominent and usually some tinting of wing apically. Basicosta with few to many setae, but these always smaller and sparser than on costa. Abdomen brown to nearly black, darkest on midline, especially first 2 segments, with sharp discrete pale triangles on tergites 1 to 6 and narrow pale hind margins widening slightly at sides.

Male. Length 10.0-11.5 mm of wing 9-10 mm. Eyes holoptic, densely long pilose, the facets but slightly differentiated in size and not demarcated, the pilosity longest on upper part of eye. A small tubercle between eyes at vertex, not extending above eye level. Frontal triangle silvery white pollinose, contrasting with brown black-haired face. Palpi brown, long dark haired. Antennae more slender than female, plate yellow to dark red, style black. Mesonotum subshiny, blackish, rarely with traces of anterior gray stripes. Legs as in female, the tibiae nearly black. Wings as in female, but spots on fork and crossveins smaller and paler. Abdomen conical, colored as in female, but median pale triangles broader and smaller and sides of first tergites often contrasting more with central blackish area.

Material examined. Brazil: Santa Catarina State. 3 females, 5 males, Nova Teutonia, X-XI, (F. Plaumann). A female and male were compared and found to

agree with the types of *punctipennis* on loan from Berlin Museum. Rio de Janeiro State, 5 females, Tingua, no date or collector, one compared and agreeing with types of *T. scythropa* and *H. beieri* in Vienna; 1 female, Mangaratiba, VIII-1938. Argentina: 1 female, 1 male, Iguassu. Paraguay: Amambay Dept., 1 female, 16-VIII-1980 (D. Strickman). 1 male, Villa Rica, (F. Schade). In addition Fairchild has determined as this species the following material: 1 male, Pelotas, Rio Grande do Sul, Brazil in Coll. M. Leclercq; 71 males, 3 females, Nova Teutonia, Sta. Catarina, Brazil, in CNC.

Discussion. Specimens from Santa Catarina and Sao Paulo States are generally larger and darker than those from Rio de Janeiro, and our homotypes of *punctipennis* and *scythropa* are like the larger and smaller specimens respectively. There are, however, specimens of intermediate size and coloration, and we are unable to point out any consistent differences among our series. Our dated specimens indicate that the species flies from Aug. to Nov., late winter to early spring in the latitude of Sao Paulo.

The species can be separated from *S. paraguayensis* by the less boldly marked mesonotum,, dark femora, and usually less heavily spotted wings, though the most striking differences are shown in the male eye, densely pilose and without enlarged upper facets in *S. scythropa*, bare and with greatly enlarged upper facets in *S. paraguayensis*. In addition, we have 3 females from Paraguay, Villarica, Col. Independencia and 1 female from Maracaju, Mato Grosso, which are probably this species, but have broader frons, indices 3.3-3.9, are paler, reddish, with weaker wing spots. All are either old and faded or otherwise poorly preserved. One agreed structurally with type of *S. paraguayensis* but was much paler. A further 3 females from Rio de Janeiro, Campos Murundu, Aug. 1978, Alvarenga leg. have much narrower frons, indices 5.1-5.8, no appendix, small wing spots but dark yellow costal cell, pale legs and body. They are not well preserved, but may represent an additional species. We are probably dealing here with a complex of species, but available material is neither abundant enough nor sufficiently well preserved to enable us to sort them out.

Stygommissa spilota n. sp.

(Figs. 65-67, 88)

A moderate sized dark brown species with a blackish mesonotum, lighter brown abdomen, slender bicolored or all yellow antennae, and heavily spotted wings which have the spot on fork often extended as a spur along R_5 to wing margin.

Female. Length 12 mm, of wing 11 mm. Eyes bare, greenish black without pattern (revived). Head structures as figured. Frons yellowish gray pollinose, slightly darker at vertex, where it is beset with numerous short black hairs. Ocellar tubercle shiny, black, with vestiges of two lateral ocelli. Callus black, shiny, merging above into a broad ridge. Subcallus thinly pollinose, concolorous with frons; frontoclypeus slightly more yellowish, genae gray, sparsely gray bearded. Antennae orange, the scape and pedicel beset with short black setae, the dorsal angle of basal plate with a few short black setae, the style slightly darker, the terminal 2 annuli black or nearly so. Palpi pale tan, whitish pollinose, black haired. Proboscis blackish, membranous, slightly exceeding palpi.

Mesonotum and scutellum black in ground color, the notopleural lobes brownish, thinly gray pollinose, unstriped, sparsely beset with erect black and recum-

bent brassy hairs. Pleura and coxae black to dark brown, gray pollinose, white haired. Last 2 two pairs of legs brown, the femora mainly pale haired, the tibiae mainly dark haired, the tarsi dusky. Forelegs darker, the femora nearly black, the fore tibiae bicolored, the basal half yellowish, sparsely dark haired, the apical half black, densely black haired, as are tarsi. Wings as figured. Costal cell yellow, wing membrane otherwise hyaline except for prominent brown clouds around crossveins and fork of 3rd vein, much larger around end of discal cell and fork, where the cloud is often extended along R_5 nearly or quite to wing margin. There is also a brown diffuse patch in wing apex beyond the brown stigma. Appendix at fork shorter than the long subtending vein segment. Basicosta pointed, beset with short black setae, though less densely setose than adjoining costa.

Abdomen pale brown in ground color, semitranslucent on tergites 1 to 3, darker opaque brown on remaining segments, beset throughout with short black hairs except for small, faint, sparse patches of pale hairs on middle of posterior borders of tergites 2-5, and complete hind border of 6. Lateral corners of tergites 4-6 also with some pale hairs. Pollinosity sparse, brown, the whole dorsum subshiny. Venter paler, more evidently pale pollinose and entirely sparsely pale haired.

Male. Not known.

Material examined. Holotype female, Peru, Cuzco Dept., Quincemil, 13-3-VIII-1962, 780 m elev. (L. Pena). Paratypes, 85 females, same locality and collector with dates in August and September, 1962. Holotype in coll. of L.L. Pechuman, paratypes in coll. Pechuman, CNC, FSCA and the authors.

Discussion. This species resembles *S. changena*, *S. bipuncta* and *S. kroeberi* in having the dark clouds around fork and apex of discal cell much more prominent than those at ends of basal cells. From *S. changena* it differs in having the appendix at fork of 3rd vein (R_{3+4}) short, shorter than the long subtending vein segment, in generally paler wings, especially the costal cell, and in narrower frons. From *S. bipuncta* and *S. kroeberi* it differs in blackish mesonotum and scutellum, brown and yellow in 2 latter species, and in more heavily infuscated wings. *Stypommisa bipuncta* also differs in much smaller size and quite faint and small wing spots, while *S. kroeberi* has wholly yellow antennae. Frontal indices of 7 specimens of *S. spilota* range from 5.7 to 7.2 with a mean of 6.3. The name is from the Greek *spilota*, meaning stained or spotted, in reference to the heavily marked wings.

***Stypommisa U-nigrum* Philip**
(Fig. 89)

Stypommisa u-nigrum Philip 1977, Proc. Ent. Soc. Washington, 79(1): 28-30, figure 1.

A large species for the genus, with prominently yellow banded abdomen and yellow wings with very large and prominent brown spots on all crossveins and fork, and apex and hind margin grayish infuscated.

The original description is as follows: "Holotype female, 12.5 mm. Eyes bare, unbanded (relaxed). Frons brown pollinose, narrow, index 1/5.8, nearly parallel-sided, patch of coarse black bristles at vertex above small but distinct

tubercle with 3 compact vestigial ocelli; callosity dark brown, taller than broad, tapered abruptly above into slender keel, separated narrowly from eye margins and from yellow pollinose subcallus below, the usual suture across top of latter indistinct. Face and cheeks gray pollinose with mixed gray and some black hairs. Two basal antennal segments brown with black hairs, scape a little longer than tall, plate red with low dorso-basal angle, subequal in length to sharply black style. Palpi dusky gray, black-haired, long and slender but blunt, nearly as long as unsheathed stylets.

Thorax pale pollinose and mostly pale pilose, accentuated in the prescutellar-scutellar area behind a peculiar brown, black-haired, wide U-shaped marking and a narrow midline forward from it. Fore legs dark brown, black-haired, tibiae reddish with pale hairs in basal thirds. Two hind pairs of legs reddish with mostly pale hairs, more black on dorsums of femora and in hind tibial fringes. Wing with unusual pattern of whitish membrane around prominent clouds, the apical and hind margins smoky, accentuated in certain lights. Spur veins as long as stems. Halteres pale brown. Basicostas with a few setulae.

Abdomen reddish brown, darker caudally, black-haired across bases of terga, the incisures broadly reddish yellow (as much as 1/2 of 3 and 4) with yellow hairs; venter reddish, entirely yellow-haired.

Holotype and 2 paratype females, Mexico: Chiapas, Montebello National Park, 17-V-69. H.J. Teskey. In CNC (Canadian National Collection) No. 12925; one in CAS (California Academy of Sciences). Wear in the latter has reduced the prominence of the incisural bands and the scutal marking. This U-shaped marking in front of the pallid scutellum and the peculiar whitish wing membranes surrounding unusually heavy clouds with smoky apical and hind margins distinguish this from related species. The banded abdomen is unusual in the genus."

Material examined. One female same data as holotype and paratypes. (The specimen bears notes as to frontal index etc. apparently in Philip's hand, though not labelled as paratype. It was one of ten specimens sent for identification from Dr. Teskey, the other nine being topotypes of *Stenotabanus apaches* Philip with identical data to those recorded for the holotype of that species). Mexico: Chiapas State, six females, Lagos Montebello, 19-20-V-1970 (R.L. Dressler). All lack most of abdomens due to a visitation of ants shortly after they were collected. Frontal and divergence indices of this material are as follows: 4.8-5.5 ($x = 5.32$, $n = 7$) and 1.3-1.6 ($x = 1.4$).

Discussion. The original description stresses a dark U-shaped mark on mesonotum, but this is visible only in some of the above specimens and prominent in none. The costal cell is strongly yellow, as is the wing membrane between the large brown spots, not white in any of our specimens. The frontal calli of the Lago Montebello specimens are black, only the topotype having it brown, as figured for the holotype. All known specimens of this species are from this locality, all taken in May. This is one of only 2 *Styppommisa* recorded from Mexico, the other being *S. captiroptera*.

The specimens of *Stenotabanus apaches* mentioned above were the first we had seen of this species. Unlike Philip, we believe these are better placed in *Stenotabanus*, in spite of the strongly spotted wings. The frontal characters with callus as wide as frons, vestiges of black hair patch surrounding median callus, bare basicosta, and well developed ocellar tubercle are very similar to those of *Stenotabanus flavidus* Hine, which is even larger. Both frons and wing spotting are like the smaller *Stenotabanus brunettii* and *St. batesi* from the Antilles. The

two green eye stripes in *St. apaches* also would be most unusual in *Stypommisa*, but expected in *Stenotabanus*.

Stypommisa venosa (Bigot)
(Figs. 68-71)

Tabanus venosus Bigot 1892, Mem. Soc. Zool. France, 5: 685, Brazil, Para.

Stypommisa venosus: Kroeber 1930, Zool. Anz. 86(9-10): 251-252, fig. 1; 1934, Rev. Ent. 4(2): 275.

Stenotabanus venosus: Fairchild 1956, Smiths. Miscell. Colls. 131(3): 31. Wrongly synonymized *Stypommia maculipennis* Kroeber 1929 with this species.

Stypommisa venosa: Fairchild 1971, Cat. Dipt. Amer. S. of U.S. Fasc. 28: 82.

A pale yellowish brown species with paler scutellum, mainly dark haired abdomen and wings with strong round brown clouds at fork of 3rd vein and apex of discal cell but not at ends of basal cells.

Female. In 1980 we borrowed Bigot's type, courtesy of J.E. Chainey, from the British Museum and append here a description of it.

Length 10.5 mm, of wing 11.5 mm. Head characters as figured. Eyes bare, pattern not discernible. Frons and subcallus reddish brown pollinose. Callus nearly black. Antennae reddish brown, dorsally dark haired, the style blackish, contrasting with basal plate. Palpi light brown, pale pollinose, entirely long black pilose. Face and cheeks gray pollinose, sparsely pale haired. Mesonotum and scutellum reddish brown in ground color, the vestiture lost so that no pattern is evident. Pleura apparently pale pollinose, dark haired except for tufts of pale hairs on propleura and beneath wing insertions, but much denuded and encrusted with dirt. Legs reddish, largely pale haired, the fore coxae infuscated and tarsi and apices of at least fore tibiae dusky and dark haired. Halteres with orange knobs. Wings as figured, costal cell orange, stigma yellow, membrane quite dirty, apparently clear except for brown clouds around crossveins.

Abdomen much denuded and crusted, at least the first 2 segments clear yellowish brown, without integumental dark markings or visible pollinose markings.

Discussion. We cannot exactly match this specimen with any in our possession. It comes closest in structure to *S. fulviventris*, but that species lacks strong wing spots and has a narrower frons. *S. changena* is very similar in most respects, but has shorter and stubbier 3rd antennal segment and integument of thorax and scutellum are blackish and knob of halteres dark brown, differences seemingly too great to be explained by fading of the type of *S. venosus*. No Brazilian species we have seen is like *S. venosus*, and in view of Bigot's known disregard of localities, the type may have come from elsewhere.

Specimens determined by Kroeber in Dresden Museum from eastern Peru are not the same, nor does his description and figure published under *S. venosus* (1930) agree at all with the type. A specimen from Nanegalito, Ecuador, was thought to agree with Bigot's type by Philip (in litt.) and we have an old specimen from Gualea, Pichincha, Ecuador, which also agrees fairly well with the type, but it lacks antennae. Both these specimens are closest to *S. furva* in structure and wing pattern, but are light brown rather than bluish black. We give a figure of

the type, but lack of fresh material prevents us from placing the species in the key. It will probably key out with *S. kroeberi* or *S. bipuncta*.

The light brown species from Bolivia and eastern Peru which seems to represent the form identified as *S. venosa* by Kroeber is described earlier in this publication as *S. kroeberi*. It differs from the type of *S. venosa* Bigot by shorter antennal style relative to the basal plate, narrower frons with smaller and more slender callus, usually with wing apex beyond fork more or less infuscated, and has pale coxae and yellowish scutellum.

The original description is of little use. In 1953, Fairchild studied the type in British Museum and in addition to the above comments his notes are appended here, made partly at the time and partly later.

Type: 1 female in BM(NH) Red circled Type label, an indecipherable Bigot locality (?) label, a Bigot hand label with "Tabanus venosus female n. sp. inedit Alger Fevr. 1890 J. Bigot Bresil" and a Bigot coll.—BM accession label. The type is a female as indicated by the description and Bigot's label, not a male as published. The specimen is fairly well preserved, lacking one antenna and being somewhat dirty. I can detect no structural differences between this and *maculipennis* Kroeber. (= *furvus* Hine) In color the type is lighter, being a uniform light cinnamon brown. The specimens labelled "*Stypommia venosa* Big." from Peru, Urubamba fl. and Pichis, Pto. Yessup, Schnuse coll. ex Dresden Museum, are not the same in my opinion, though they apparently formed part of the material studied by Kroeber (1930). His figure seems to have been taken from another species entirely as the antennae, palpi and frons are not at all like those of the Type."

***Stypommisa xanthicornis* n. sp.**

(Figs. 59-61)

A small brown species with faintly spotted wings and wholly yellow antennae.

Female. Length 10 mm, of wing 10 mm. Eyes bare, no pattern evident. Head characters as figured. Frontal index 5.8; divergence index 1.5. Frons grayish yellow, without darker areas or evident hairs. Callus and tubercle at vertex reddish brown. Subcallus and upper genae concolorous with frons. Frontoclypeus and lower genae gray. Beard sparse and short, pale brown. Antennae wholly yellow, the first 2 segments sparsely brown haired dorsally. Palpi rather inflated, white pollinose, beset with short black hairs. Proboscis black, membranous, unusually short, hardly longer than palpi. Occiput silver gray pollinose, without marked postocular fringe of setae.

Mesonotum reddish brown, subshiny, without marked stripes. Scutellum concolorous. Notopleural lobes concolorous, slightly gray pollinose, as are pleura and sternum. Legs yellow, tips of hind tibiae, distal half of fore tibiae and all tarsi darkened. Wings faintly yellowish hyaline, costal cell and stigma yellow, crossveins and fork of 3rd vein with faint diffuse brownish clouds. Appendix at fork as long as basal segment in one wing, much shorter in the other. Basicosta pointed, with 2 small black setae. Halteres light yellowish brown.

Abdomen light orange brown, subshiny, the hind margins of tergites vaguely paler, and faint indications of pale median pollinose triangles, only clearly evident on 1st and 2nd tergites. Hairs sparse, long reddish, pale yellowish on median triangles and margins. Beneath abdomen gray pollinose, wholly pale haired.

Type data. Holotype female, Brazil, Santa Catarina State, (Luderwaldt), in FSCA. The specimen bears a Kroeber det. label 1930 as *Stypommisa affinis* and was received from the Mus. Zool. Polonicum, Warsaw, through the kindness of Dr. Trojan. It probably formed part of the collections of the Stettin Museum. It agrees neither with a paratype of *S. affinis* in Vienna, with Kroeber's description of *S. affinis*, nor with a specimen in Munich determined as *S. affinis* by Kroeber.

Discussion. The species differs from other regional species, particularly *S. fulviventris*, by the shorter wholly yellow antennae, smaller size, more evident wing spots, and stouter palpi. There were supposed to be other specimens of this species in Stettin, but we do not know if they were the same, as only this one was sent.

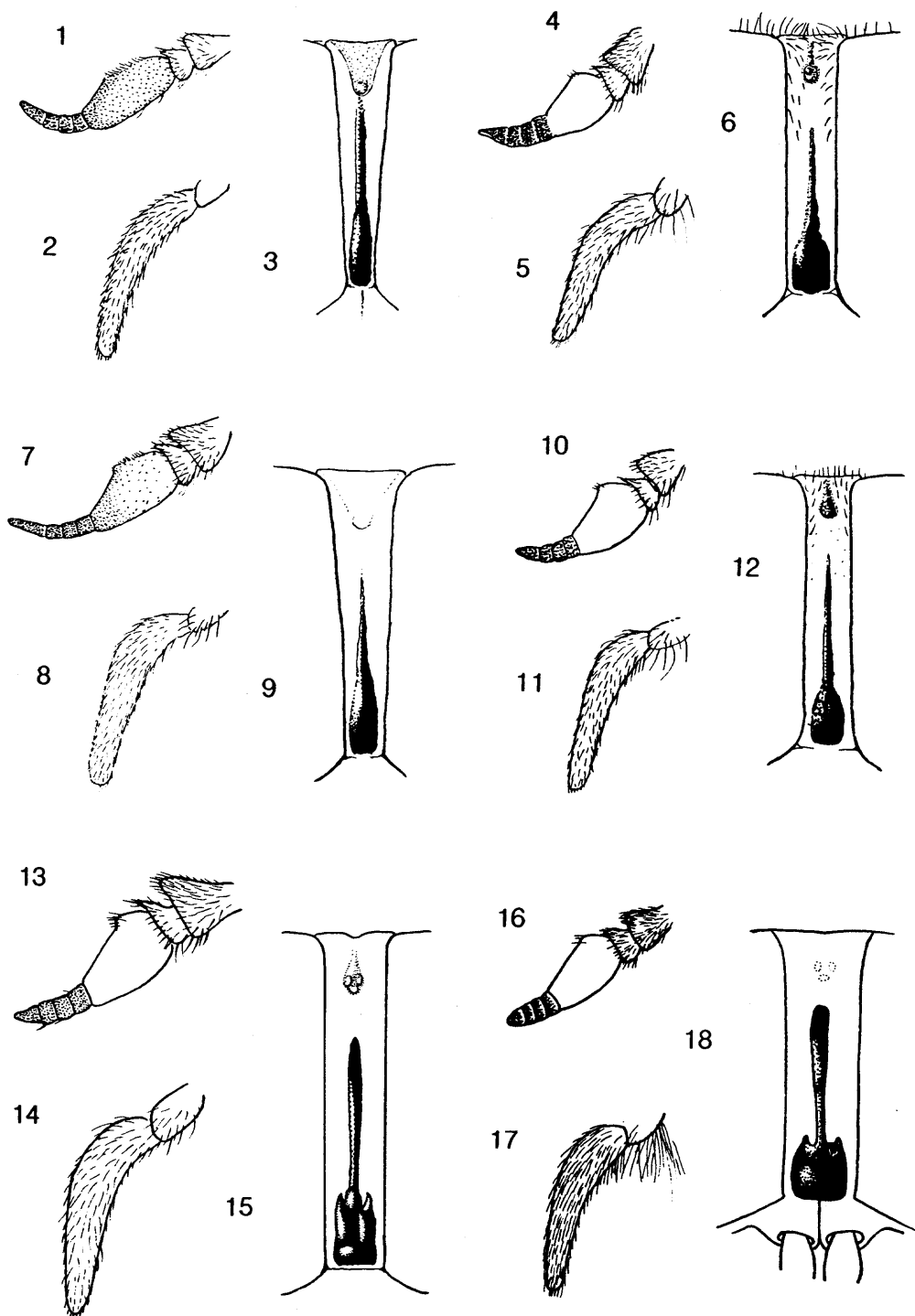
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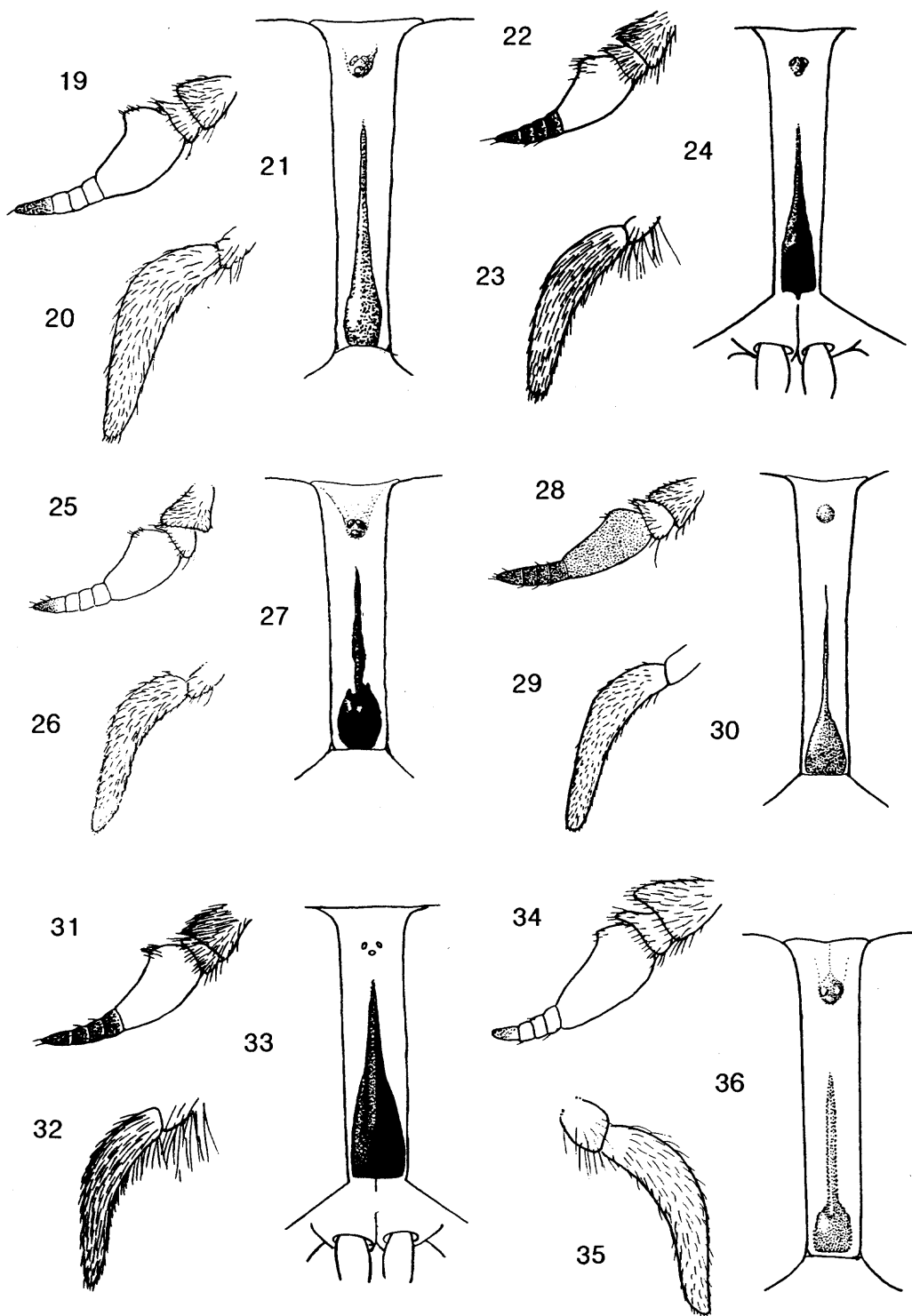
EXPLANATION OF FIGURES 1-18

Figs. 1-3, *S. apicalis*, holotype: 1, antenna; 2, palp; 3, frons. 4-6, *S. anorien-sis*, holotype: 4, antenna; 5, palp; 6, frons. 7-9, *S. apicalis*, paratype: 7, antenna; 8, palp; 9, frons. 10-12, *S. aripuana*, paratype: 10, antenna; 11, palp; 12, frons. 13-15, *S. bipuncta*, holotype: 13, antenna; 14, palp; 15, frons. 16-18, *S. callicera*, Brazil, Parque Nacional da Serra dos Orgaos, Teresopolis: 16, antenna; 17, palp; 18, frons.



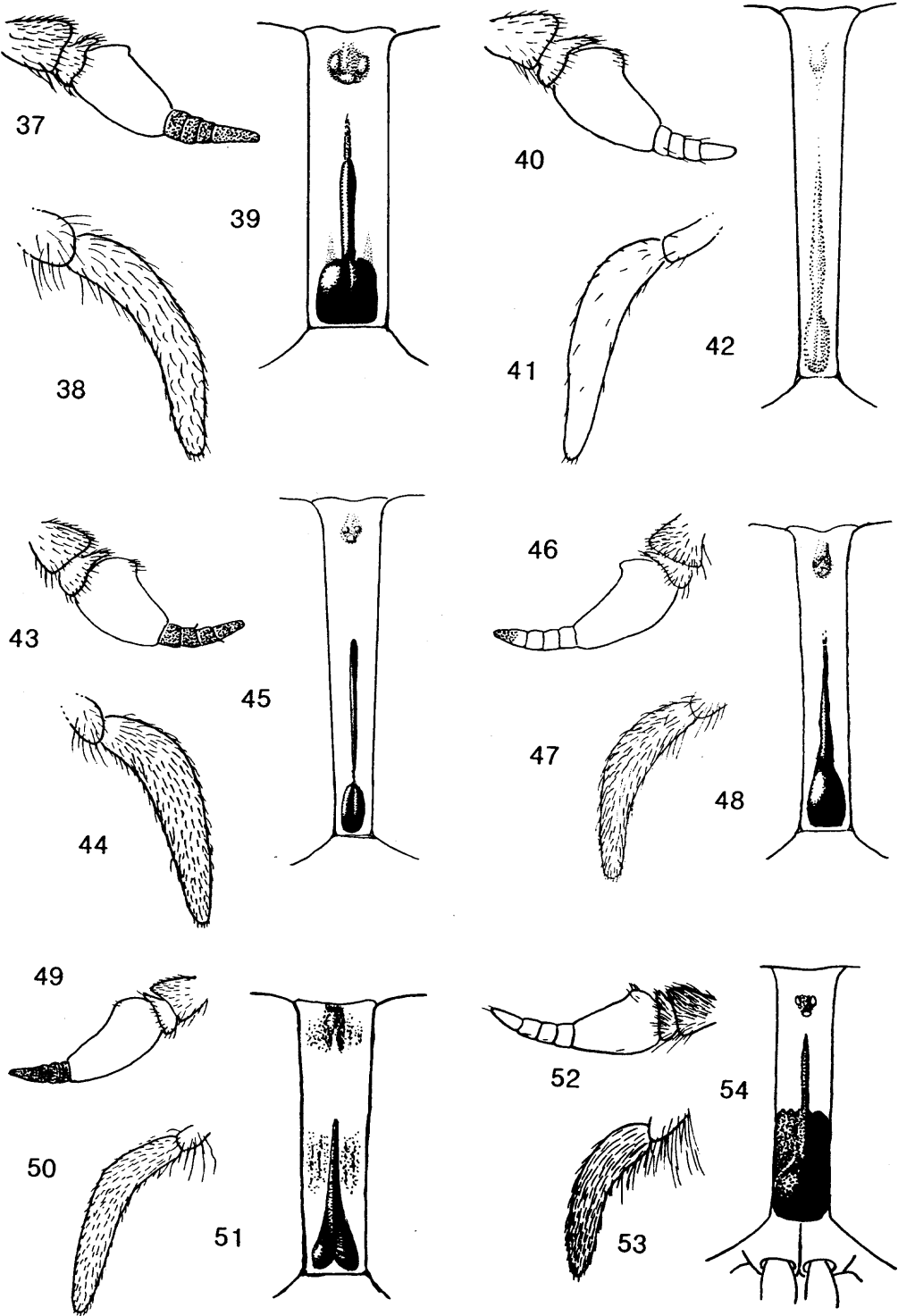
EXPLANATION OF FIGURES 19-36

Figs. 19-21, *S. captiroptera*, Panama, Canal Zone, 23-VI-1944: 19, antenna; 20, palp; 21, frons. 22-24, *S. changena*, holotype: 22, antenna; 23, palp; 24, frons. 25-27, *S. flavescens*, Peru, Quincemil, Cuzco, 16-31-X-1962: 25, antenna; 26, palp; 27, frons. 28-30, *S. fulviventris*, Brazil, Sao Paulo, Itatiaya, Est. Biologia, 15-I-1936: 28, antenna; 29, palp; 30, frons. 31-33, *S. hypographa neofurva*, Bolivia, Alto Beni, S. Inicua, 15-18-I-1976: 31, antenna; 32, palp; 33, frons. 34-36, *S. kroeberi*, paratype, Bolivia, Sara: 34, antenna; 35, palp; 36, frons.



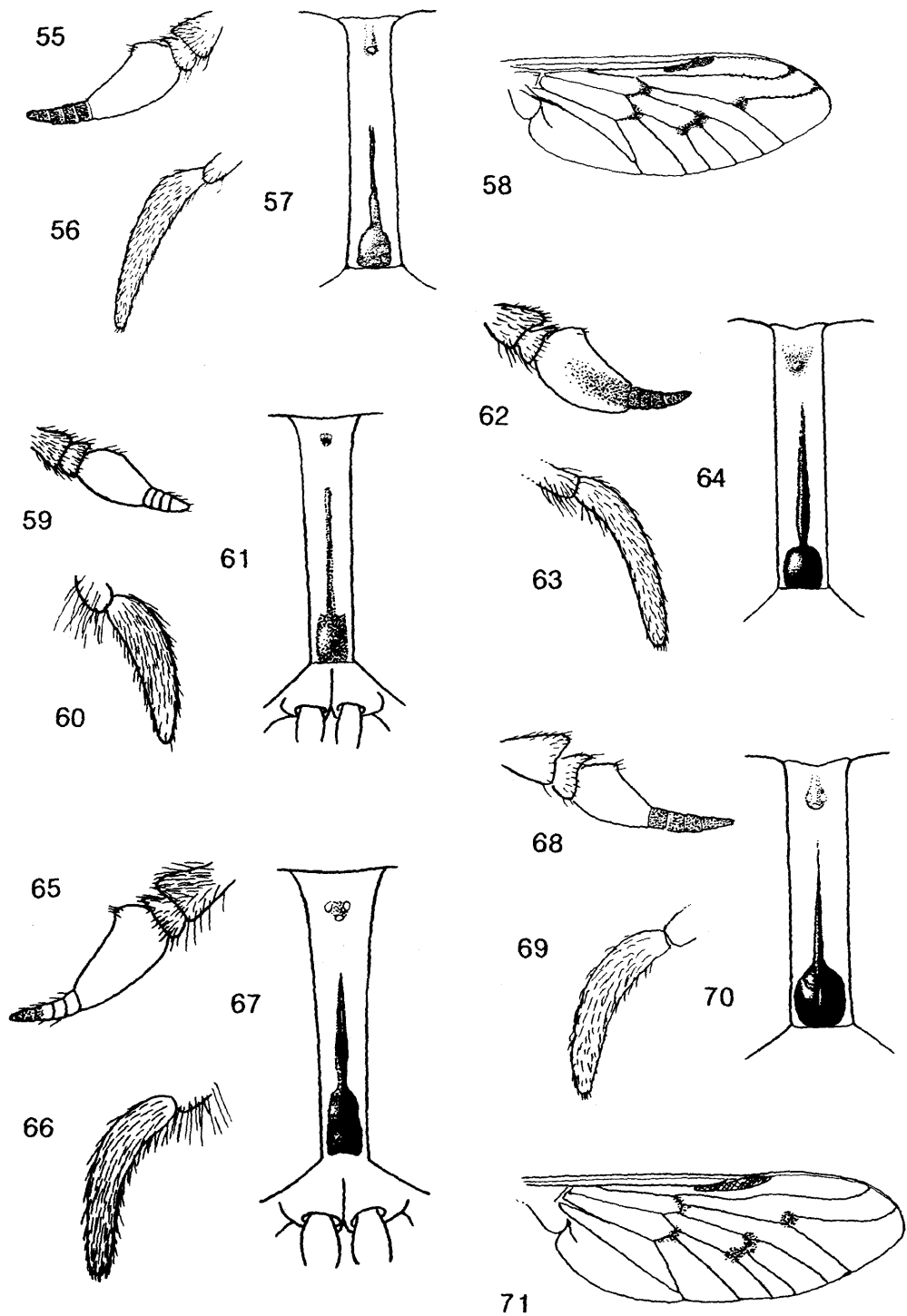
EXPLANATION OF FIGURES 37-54

Figs. 37-39, *S. furva*, Bolivia, Dept. Cochabamba, Prov. Chapare, El Palmar, 8-X-1943: 37, antenna; 38, palp; 39, frons. 40-42, *S. glandicolor*, Brazil, Abuna, Rio Madeira: 40, antenna; 41, palp; 42, frons. 43-45, *S. glandicolor*, Colombia, Meta, Villavicencio, Guayuriba, Carretera al Puente: 43, antenna; 44, palp; 45, frons. 46-48, *S. pequeniensis*, Peru, Quincemil, Cuzco, 16-31-X-1962: 46, antenna; 47, palp; 48, frons. 49-51, *S. paraguayensis*, Brazil, Sao Paulo, E.S.P., Cantareira, VIII-1958: 49, antenna; 50, palp; 51, frons. 52-54, *S. prunicolor*, Brazil, Mato Grosso, Rio Aripuana, 12-16-VIII-1974: 52, antenna; 53, palp; 54, frons.



EXPLANATION OF FIGURES 55-71

Figs. 55-58, *S. rubrithorax*, holotype of *S. punctulipennis*: 55, antenna; 56, palp; 57, frons; 58, wing. 59-61, *S. xanthicornis*, holotype: 59, antenna; 60, palp; 61, frons. 62-64, *S. scythropa*, Brazil, Rio de Janeiro, Tingua: 62, antenna; 63, palp; 64, frons. 65-67, *S. spilota*, holotype: 65, antenna; 66, palp; 67, frons. 68-71, *S. venosus*, holotype: 68, antenna; 69, palp; 70, frons; 71, wing.



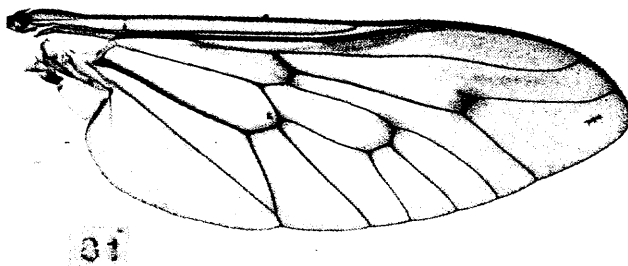
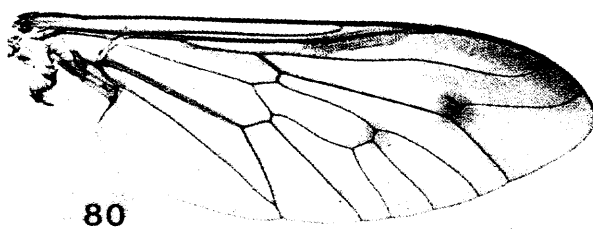
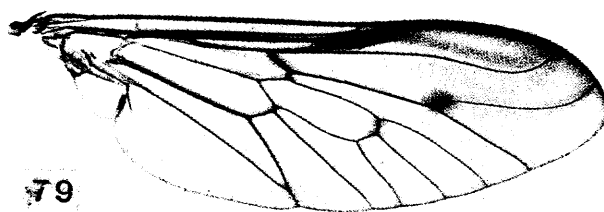
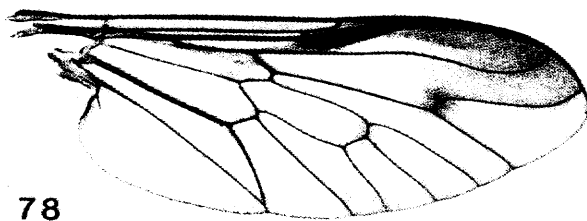
EXPLANATION OF FIGURES 72-76

Fig. 72, *S. apicalis*, Peru, Cusco, Quincemil, X-1962. 73, *S. bipuncta*, holotype. 74, *S. captiroptera*, Colombia, Valle, Rio Zapaletas. 75, *S. changena*, paratype, Panama, Bocas del Toro, 16-IX-1961. 76, *S. flavescens*, Peru, Cusco, Quincemil, X-1962.



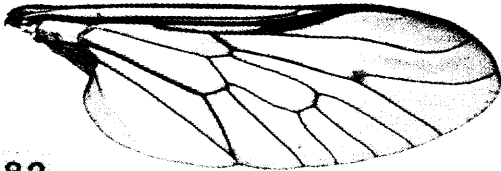
EXPLANATION OF FIGURES 77-81

Fig. 77, *S. furva*, Bolivia, Yungasweg, 12-X-1906. 78, *S. hypograpta neofurva*, Bolivia, Mapiri, S. Carlos, 9-I-1903. 79, *S. jaculator*, Colombia, Choco, Curiche River, 25-IV-1967. 80, *S. kroeberi*, Peru, Tingo Maria, Rio Huallaga. 81, *S. lerida*, Panama, Chiriqui, Boquete, Finca Lerida, III-1956.



EXPLANATION OF FIGURES 82-86

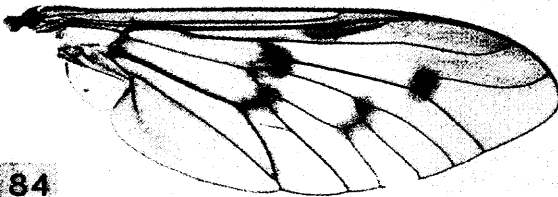
Fig. 82, *S. marucii*, Colombia, Valle, Buenaventura, 12-VIII-1973. 83, *S. modica*, Peru, Miriaticiriani, Cord. de Pichis, 9-VII-1920. 84, *S. paraguayensis*, Brazil, Mato Grosso, Sapucaí-Mirim, Cidade Azul, 8-IX-1953. 85, *S. pequeniensis*, Colombia, Valle, 41 km E Buenaventura, 19-III-1976. 86, *S. prunicolor*, Brazil, Marmelo, 8-XI-1962.



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EXPLANATION OF FIGURES 87-89

Fig. 87, *S. scythropa*, Brazil, Rio de Janeiro, Tingua. 88, *S. spilota*, Peru, Cuzco, Quincemil, IX-1962. 89, *S. u-nigrum*, Mexico, Chiapas, Lagos Montebello, 20-V-1970.



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